PREFACE

The XVII Annual Scientific Meeting (PIT) and IX Work Conference (Konker) of the Indonesian Association of Clinical Pathologist and Laboratory Medicine (PDS PatKLIn) was held in Denpasar Bali, October 31 - November 2, 2018.

The theme of this conference is “STRENGTHENING THE CLINICAL PATHOLOGY COMPETENCE IN FACING THE SUSTAINABLE DEVELOPMENT GOALS (SDGs)”

This theme specifically reminds us all to the Sustainable Development Goals (SDGs), a universal call to action to end poverty, protect the planet and ensure that everyone enjoys peace and prosperity. As a Clinical Pathologist, we must be able to contribute to the achievement of SDGs in the health sector through strengthening our competencies.

The conference included keynote speakers, invited speakers, workshop, oral and poster presentation as well as discussions on specific topics in the meet the expert. This conference was participated by almost 1000 participants. The conference scientific board accepted around 300 papers to be presented either oral or poster presentation, discussing in area of Haematology, Oncology, Infectious diseases, Immunology, etc.

These proceedings contain articles that were accepted for publication to Bali Medical Journal, through the single blind review process.

Finally, we would like to thanks to the committee, reviewer, proceeding team who dedicating his or her time to finalized this proceeding book.

Prof. Dr. dr. Ida Parwati, Sp.PK(K), PhD
Head of Indonesian Clinical Pathologist and Laboratory Medicine Association
PREFACE

Dear colleagues,

It is truly an honor that we will accept colleagues at the 17th ANNUAL SCIENTIFIC MEETING AND 9th WORK CONGRESS OF INDONESIAN CLINICAL PATHOLOGIST ASSOCIATION AND LABORATORY MEDICINE, held at The Stones Hotel Kuta Bali on October 31st - November 2nd 2018.

This scientific meeting was held in the form of workshops and symposiums, which are expected to renew and improve knowledge so that it is going to be useful in daily work. In addition, this event can be used as a venue for reunion with peers in arms.

Don’t forget to enjoy the beautiful sunset on Kuta Beach. And there are also many souvenirs that can be taken home afterwards. We also facilitate the joint event to several destinations. Hopefully bring unforgettable memories.

We really hope to be able to meet with all of you soon.

dr. Ni Nyoman Mahartini, Sp.PK(K)
Chairman of Organizing Committee
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Blood gas analysis monitoring for critical III patients in the ICU

Made Wiryana
Anesthesiology and Intensive Care Department, Faculty of Medicine, Udayana University, Sanglah General Hospital, Bali.

Arterial blood gas (ABG) analysis is an essential part of diagnosing and managing respiratory function including both oxygenation and respiration, and also allows interpretation of acid-base status as well. The blood gas test can determine how well the lungs are able to move oxygen into the blood and remove carbon dioxide from the blood. Lawrence J Henderson is a biochemist at Harvard University, who was first to understand and express quantitatively the buffering effect of carbon dioxide and bicarbonate interacting with hydrogen ions in blood, and its followed by Stewart’s concept of strong ion difference (SID), which is defined as the absolute difference between completely dissociated anions and cations. Arterial blood gas analysis and its interpretation is an important tool for every critical III patients in the ICU, especially the accurate value of the pH of blood, oxygenation and ventilation (PO2 and PCO2), metabolic disturbance/cellular metabolism that generates non-volatile acids (lactic, acetocetate, creatinine, etc) that will showed by HCO3 level as the buffer mechanism of the body, and value of acid-base deficit/excess (BE). Actually, the body have a physiologic effect to maintain the blood pH by several mechanism such as: buffer system, respiratory compensation (short term) by the PCO2 removal, and long term compensation by the kidney (increase or decrease HCO3 excretion and absorption). The primary diagnosis of acid-base status that confirm from blood gas value include: Respiratory Acidosis or Alkalosis, Metabolic Acidosis or Alkalosis, increase or decrease SID and anion gap (AG value). This information may be followed by full compensated, partial compensated, or uncompensated mechanism. The PCO2 level have a key role of short compensation by the lung, and bicarbonate (HCO3) reflex the balance between the production and renal elimination of non-volatile acids to achieve normal blood pH. By the Henderson-Hasselbalch equation, will allow to measure the blood pH at equilibrium in an acid-base reaction. As the physician or the Intensivist whose responsible in the ICU must be treat the primary organ dysfunction that interfere metabolic disturbance first, and the blood gas monitoring will guiding the responses of the treatment for further management therapy and ventilator setting, so do not shoot the blood gas value.

Key word: Monitoring in the ICU. Interpretation of Arterial Blood Gas in the ICU.
services, evaluated and recorded as documents. Good quality control is essential for laboratory services so that the laboratory can provide excellent service. The Hospital must establish an internal quality program that includes pre-analytic, analytical and post-analytic stages that contain validation of test methods used to test accuracy, precision and value range results; daily surveillance and record the results of examination by competent staff; reagent tests; quick correction if an error occur; record and resolve the problems that happen under laboratory physician supervision. To obtain laboratory services that have quality standards, it is necessary to make a measurable quality standards. In Indonesia currently there is an organization that responsible, implement and monitor these standards. For private clinical laboratories will be assessed by the Health Laboratory Accreditation Committee (KALK) and the National Accreditation Committee (KAN), while for the laboratory in the Hospital is assessed by the Hospital Accreditation Commission (KARS).

Keywords: internal quality control, quality standards, validation, supervision

The importance of internal and external quality control for laboratory quality assurance

Abas Suherli

The laboratory management have to set up, implement, and maintain the quality management system, and to ensure that the laboratory is able to guarantee the quality of the examination results continuously and sustainably. This quality management system comprises the pre-analytic to post-analytic stages. The management of laboratory should develop quality guidelines which accompanied by policies and key quality indicator, and determine the target for each of the defined key quality indicator. One of the ways to ensure the quality of the laboratory is by conducting quality assessment through Internal Quality Control (IQC) and External Quality Control (EQC).

Internal Quality Control is performed by the laboratory at any time before doing the assessment on patient’s sample, conduct evaluation regularly and make corrective and accomplish preventive action when there is a problem. External Quality Control must be engaged by all health laboratories as stated in PERMENKES No.411/Menkes/PER/III/2010 verse 6 about Health Laboratories. The obligation to participate EQC has also stated in KEPMENKES No.298/Menkes/SK/III/2008, about The Guidelines for Health Laboratories Accreditation, where all laboratories must participate in EQC activity regularly and take part in all EQC programmes according to the type of the laboratory and it competencies and with a regular evaluation as well. ISO 15189 also requires all laboratories to participate in the inter laboratory comparation programme, to monitor the result, and to perform evaluation and corrective action when necessary.

For the laboratories which are integrated with other health facilities, especially hospital, when they are going to be accredited by either KARS or JCI, they will also be assessed their participation in the External Quality Control programme. In order to maintain the harmonization and accuracy of the results of laboratory examinations, the good implementation of EQC should be carried out regularly and periodically at least 4 times in one year.

Keywords: Quality assurance, Internal Quality Control, External Quality Control

Quality requirement for morphology evaluation Of peripheral blood smear

Lidy Utami
Clinical Pathology Department, Fatmawati Hospital, Jakarta

Morphology evaluation of peripheral blood smear is an important assay for diagnosis, therapy monitoring, and determining further investigation. Morphology evaluation is performed based on clinical indication or laboratory indication for confirming abnormality or flags in hematology analyzer result, performing leukocyte differential count when necessary, or following up specimen which fulfill smear review criteria.

Optimal result of morphology evaluation can be obtained when quality requirement in pre-analytical, analytical, and post analytical is fulfilled. Pre-analytical aspects include identification, clinical and laboratory information, specimen type and handling, smear and staining of blood film. Analytical aspects include microscope handling and maintenance, as well as morphology evaluation technique and skill. Post-analytical aspects cover reporting and storage of report and blood smear.

Morphology evaluation of peripheral blood smear must be performed in systematic way, starting from review of identification, clinical information, and laboratory data. Slide examination includes macroscopic and microscopic assay, gradually from low power field (100x), high power field (400x), and immersion power field (1000x) when needed. Erythrocyte evaluation should be done in at least 1000 erythrocyte in ideal morphology area, covering distribution, size, staining, shape, and presence of inclusion bodies. Abnormality of shape should be assessed and graded according to ICSH guideline to avoid subjectivity. Leukocyte differential count is performed in minimal 100 leukocytes with Battlement method, using 400x magnification continued by 1000x for assessment of abnormal cells. Thrombocyte evaluation consist of number estimation and morphology assessment. Evaluation report includes description of erythrocyte, leukocyte, and platelet, completed with conclusion and suggestion for further investigation.

Keywords: peripheral blood smear, morphology evaluation, indication, quality, ICSH

Standardization of Urinary Sediment Examination and Quality Control in Urinalysis

Hani Susianti1, Yoavita Suryadinata1
1Department of Clinical Pathology, Faculty of Medicine Brawijaya University/ Dr. Saiful Anwar General Hospital Malang.

Microscopic examination of urinary sediment is important in detecting and evaluating kidney and urinary tract disorders and other systemic diseases. The results of this examination depend on two main factors, correct sample and skills of the laboratory technician conducting the examination. The existence of various procedures and interpretations of urinary sediment examination requires a standardization in sample collection, sample preparation, observation, and reporting of examination results. The best sample for sediment examination is morning urine, which should be examined immediately in less than 1 hour after collection. A laboratory must carry out quality control before conducting the examination, to ensure that the examination performed will yield correct results. Quality control on urinalysis is done on chemical
and sediment examination and the results need to be interpreted and followed up in the right way. Examination of urinary sediment is first performed under low power field (LPF) to observe casts, then continued under high power field (HPF) to observe leukocytes, erythrocytes, epithelial cells, crystals, bacteria, yeast and protozoa. Several things need to be considered in the examination of urinary sediments. Erythrocytes must be differentiated into normo- (describing non-glomerular abnormalities) and dysmorphic (glomerular abnormalities) shapes. Epithelial cells examination needs to report the presence of renal tubular cells to detect the presence of acute tubular necrosis (ATN). Attention must be given to the presence or absence of clumps of leukocytes, types of casts, and pathological or non-pathological crystals. The existence of various kinds of guidelines in reporting urine sediment along with its advantages and disadvantages, requires a laboratory to determine which guidelines will be followed and consistently report the results of the examination based on these guidelines.

Keywords: Standardization, urinary sediment, quality control.

Macroscopic and chemical examination of urine

Ira Puspitawati
Clinical Pathology and Laboratory Medicine Department Faculty of Medicine, Public Health and Nursing Universitas Gadjah Mada/ Dr Sardjito Hospital Yogyakarta

Urinalysis is a simple examination that is very important to support the diagnosis of some diseases. This examination consists of macroscopic, chemical and microscopic examinations. Macroscopic examination assess the physical condition of urine such as the color, foam, clarity, odor, concentration and volume. The presence of disease processes and abnormal urine components can be evident during the initial physical examination of urine.

The next stage of urinalysis is chemical examination using reagent strips. Some parameters that can be examined are specific gravity, pH, protein, blood, leukocytes, nitrite, bilirubin, urobilinogen, glucose and ketones. To interpret the results we have to understand the reaction principle, the analytic sensitivity and specificity of the reagent strips. For example those strips only detect albumin specifically, so another type of protein can not be detected, and the strips only detect leucocyte esterase in granulocytes so another types of leukocytes won’t be detected. By understanding those we will be able to answer any discrepancies between the results of the urinalysis and clinical condition as well as between chemical and microscopic examinations. We also understand the causes of false negative and false positive results.

Another things that must be considered are the pre-analytic factor, including that there should be no delay in the examination for more than 2 hours because it will have an impact on the results, the storage of reagent strips and quality control monitoring. All of them play a role in supporting the validity of the urinalysis results.

Keywords: urinalysis, macroscopic, chemical, interpretation, analytical specification

Basic and clinical application of flow cytometry

Umi Solekhah Intansari
Faculty of Medicine, Community Health and Nurses, Gadjah Mada University, Yogyakarta

Flow Cytometry is a means of identifying and measuring certain physical and chemical characteristics of cells or particles as they travel in the suspension. The benefit of flow cytometry is the rapid simultaneous measurement of several parameters on a cell by cell basis. Flow cytometry uses fluorescent probes to identify and characterize cells or particles. Cells or particles tagged with fluorescent molecules enter the cytomter via a fluid stream. The cells then pass by a laser, which emits a specific wavelength of light. The fluorescent signal is detected and amplified, then translated into an electronic signal, which is sent to the computer. The result is a visual presentation describing an individual or group of cellular events. The cells or particles can be separated by sorting, or the information can be collected and analyzed.

In clinical laboratories, flow cytometer is most frequently used for leucocyte subset analysis. The demonstration that CD4 T-cell counts can be used to monitor HIV disease progression opened the way to the first clinical application for flow cytometry technology. The development and implementation of flow cytometry-based technologies has had major impacts on the diagnosis and classification of disease, monitoring, and prognostication of patients with cancer. Improvements in flow cytometry instrumentation and availability of an expanded range of antibodies and fluorochromes have led to more accurate phenotyping of cells, leading to the enhanced identification of abnormal populations.

Moreover, the recent technology of flow cytometry help us in transplantation and stem cells development by using cell sorting enhanced technology. Recent progress in flow cytometry have been discussed in order to give an opinion about the future importance of this technology.

Flowcytometry for Leukemia Immunophenotyping: Dharmais Cancer Center Experience

Lyana Setiawan, Agus Susanto Kosasih, Indarini, Nasuroh
Clinical Pathology Laboratory, Dharmais National Cancer Center

Immunophenotyping is one of the criteria for classification and diagnosis of acute leukemia according to the World Health Organization (WHO). Immunophenotyping can be used to determine the lineage and degree of maturation, identify abnormal antigen expression and distinguish mixed phenotype acute leukemia. Immunophenotyping can also be used to monitor minimal residual disease, especially in childhood ALL. Hereby, we proposed a simple 5-tubes 4-color panel for leukemia immunophenotyping that included intracytoplasmic and surface antigens relevant for the diagnosis of acute leukemia.

Keywords: Flowcytometry, leukemia immunophenotyping, 4-color panel

Benefit of lactate monitoring for critical III patient in ICU

Made Wiryana
Departement of Anaesthesiology and Intensive Therapy
Medical Faculty Udayana University / Sanglah Hospital

Lactate is a molecule that continuously created in the body that has been used as a marker for declining health of intensive care unit (ICU) patients. Lactate has often been used as a surrogate for cellular metabolism and may have strong predictive value in determining outcome. Lactate is a metabolic end-product of anaerobic glycolysis, and its produced in a high amount at about 0.8 mmol/kg/hour mainly in skeletal muscle, skin, brain, intestine
and red blood cell. Lactate clearance occurs primarily in the liver, kidney, and lesser in skeletal muscle, that’s why the normal blood level can be maintain at less than 2 mmol/L. Blood lactate levels are frequently measured in critically ill patients for the correct interpretation of hyperlactataemia which it is essential to have sufficient understanding of anaerobic or aerobic mechanisms of production and clearance, in the other word, increased lactate production may cause by inadequate tissue oxygenation or increase metabolism by increase glycolysis. Accumulation of lactate in the body has been associated with poor outcomes (high morbidity, high mortality, and prolonged length of stay). Hyperlactataemia or lactic acidosis divided by two type such as: TypeA, if its cause is associated with tissue hypoxia and type B, if there is no hypoxia or over production. Lactate in a patient can be measured either in venous or arterial blood. As a clinicians, knowing the underlying cause of the increased lactate concentration is a very important in determining treatment. When oxygen delivery is the main cause of lactic acidosis such as in severe sepsis or septic shock, restoring tissue perfusion by manipulate adequate oxygen content and cardiac output is a very important. As a prognostic factor, increase clearance of lactate by liver, kidney, and tissue muscle on early-goal-directed therapy showed better outcomes. By referring to recent multi-centre randomized controlled trials, to achieved optimal central venous oxygen saturation (ScvO2) and decrease lactate level is significantly reduced hospital mortality. This conclusion suggest that lactate measurement and monitoring in ICU setting incorporated in goal-directed therapy on primary diseases has clinical benefit and better outcome.

Key words: Clinical use of lactate monitoring in critically ill patients. Hyperlactatemia and Lactic acidosis

The role of clinical pathologist and laboratory medicine in achieving sustainable development goals

Ida Parwati
President of Indonesian Association of Clinical Pathologist and Laboratory Medicine

The Sustainable Development Goals (SDGs), officially known as Transforming our world: the 2030 Agenda for Sustainable Development is a set of 17 global goals with 169 targets in total. Health sector was in a goal number three; Ensure healthy lives and promote well-being for all at all ages. There were still unfinished agendas in SDGs such as malaria, HIV/AIDS, tuberculosis, hepatitis, Ebola and other communicable diseases and epidemics, including by addressing growing anti-microbial resistance and the problem of non-communicable diseases affecting developing countries. Clinical Pathologist may have a big contribution in this field, such as implementing new approaches and new technologies to ensure a rapid and early detection of both communicable and non-communicable diseases. Molecular testing and point-of-care testing in a rapid turn-around-time will be the method of choice in the future. Point of care testing for tuberculosis has been greatly improved by the introduction of the Xpert MTB/RIF test, which detects Mycobacterium tuberculosis and resistance to rifampicin. For malaria, economic studies suggest that current generation rapid diagnostic tests can be cost effective in low transmission environments, provided that physicians use test results to guide prescription of treatment. In antimicrobial resistant as a current major health problem, diagnostic stewardship is an important practice to support antimicrobial stewardship. In the other hand, many disruptions are facing the low-income and middle-income countries (LMICs) such as laboratory testing cost in universal coverage. The package of healthcare for diagnostic test per patient mostly could not cover the cost. A big effort should be done in guiding clinician to choose a cost-effective laboratory testing. By focusing on providing more cost-effective laboratory testing, significant progress can be made in helping to save the lives of millions.

Keywords: Clinical Pathologist, Sustainable Development Goals, cost-effective laboratory testing

Surveillance of antibiotics resistance in Indonesia

Andaru Dahesihdewi, Adhi Kristianto Sugianji, Ida Parwati, et al
Working Group of Infection, Clinical Pathology Department, Dr. Sardjito Hospital-FKKMK UGM Yogyakarta

Background: Antimicrobial resistance (AMR) has become serious problem globally. Surveillance AMR is important to be part of quality indicator in antimicrobial stewardship program (ASP).

Method: Surveillance of microbial pattern and their antibiotics susceptibility in Indonesia 2017 were developed by Indonesian Association of Clinical Pathology and Laboratory Medicine. Data aggregation was sourced from 31 hospitals antibiogram report which were joined the system of national data collection in forlabinfeksi.or.id with standardized inclusion criteria. Data was analyzed descriptively, based on hospital type-A-B-C.

Result: There were 15,302 isolates included, 4,761 (31,1%) were positive Gram and 10,541 (68,9%) were negative Gram, 61,6% reported by type-A hospital, 16,4% by type-B and 22% by type-C. Positive and negative Gram patterns respectively were E. faecalis and E. coli (blood and urine), Streptococcus spp and K. pneumoniae (sputum), S. aureus and E. coli (pus), E. faecalis and E. coli (wound), coagulate negative Staphylococcus and Enterobacteriaceae (CSF).

Antibiotic susceptibility pattern was slightly different among various types of hospital and among various clinical specimens. Positive Gram bacteria had good vancomycin susceptibility in all hospital types, except in sputum from Type-A and B hospital, also in blood and urine from Type-C hospital, similarly with linezolid susceptibility. Susceptibility pattern among Gram-negative bacteria for carbapenem and amikacin was good, in all hospital types, except on A. baumannii. For A. baumannii, antibiotic carbapenem, amikacin and cefazidime susceptibility were 20-66%, 35-80%, and up to 83%, respectively. For P. aeruginosa, antibiotic susceptibility pattern was equal among all hospital types. Their susceptibility against cefalosporin (ceftazidime), fluoroquinolone (ciprofloxacin) and aminoglycoside (amikacin) were better in higher type-hospital.

Conclusion: This result may become part of national epidemiological data for ASP program evaluation. This data may also be referred for local empirical antibiotic guideline among limited resources appropriate hospital. There will be improvement forward for more representative beneficial data.

Keywords: surveillance, epidemiology data, antimicrobial resistance, empirical treatment
Interpretation and suggestion of antimicrobial therapy on clinical microbiology culture results

Tonny Loho
Division of Infectious diseases, Department of Clinical Pathology Faculty of Medicine, Universitas Indonesia, Cipto Mangunkusumo Hospital

In each clinical microbiological culture results, there will be report of microbiology isolates and antimicrobial susceptibility results. To have a good interpretation and correct choice of antimicrobial therapy, it is need to know the working diagnosis, type of specimen, method of specimen collection, transportation, management of specimen in the laboratory and knowledge of pharmacokinetic, pharmaco dynamic and side effects of antimicrobial agents. Key words: antimicrobial susceptibility results, interpretation, choosing antimicrobes.

Role of Morphology and Immunophenotyping in the Management of Acute Leukemia

Ketut Ariawati
Hematology-Oncology Division, Paediatrics Department, Faculty of Medicine, Udayana University, Sanglah General Hospital, Bali

Acute leukaemias are characterized by uncontrolled proliferation of immature blood cells with lymphoid or myeloid lineage. A morphological bone marrow assessment represent the first step in the diagnostic pathway, for the primary diagnosis of acute lymphoblastic leukemia (ALL) and for the differentiated from acute myeloid leukemia (AML). Morphological classification is based on the identification of the leukaemia cell line and stage of cell differentiation. In 1976, the consensus that led to the French-American-British (FAB) classification was achieved. FAB classification is widely used by experts due to its technical simplicity, good diagnostic reliability dan cost-effectiveness. Assignment of lineage is critical in the diagnostic evaluation of acute leukemia, as treatment for AML and ALL differs. Myeloid and lymphoid lineage may be distinguished based on cellular morphology, cytochemical staining, and expression of lineage-specific antigens. During the past two decades immunophenotyping has yielded significant new information regarding the biological heterogeneity of ALL and has provided a solid basis for a biologically oriented and reliable classification of this disease. Lineage commitment of acute leukaemias can be achieved in more than 98% of cases by applying a standardized panel of mAbs to pan-B-cell (CD 19, cCD22), pan-T-cell (cCD3, CD7) and pan-myeloid antigen (CD13, CD33, MPO). Browman found that concordance increase to 89% when cytochemistry studies were added to FAB, and reached 99% when immunophenotyping information is available. The WHO classification is now regarded as the gold standard for leukemia diagnosis. Despite the benefits of FAB classification, molecular biology and immunophenotyping studies are essential for reaching an accurate diagnosis, choosing the right therapy and establishing a prognosis. Keywords: Immunophenotyping. Morphology. Leukemia Acute, Management

Thrombosis Management in Cancer: Anticoagulant and Laboratory Tests

Usi Sukorini
Department of Clinical Pathology and Laboratory Medicine Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada/Dr. Sardjito Yogyakarta General Hospital Yogyakarta, Indonesia

Cancer is a known risk factor for venous thromboembolism (VTE) due to stasis of blood flow, damaged tissue, and hypercoagulable state (Virchow’s triad). Thrombosis caused by cancer progression is strongly associated with increased morbidity, mortality and health costs. Anticoagulation is needed to extend the life expectancy of cancer-associated thrombosis patients. Anticoagulation of the cancer patient must be considered. It is an unique challenges as these patient have both a higher risk of recurrent VTE and a higher risk of bleeding than patients without cancer. For over decade low molecular weight heparin (LMWH) has been recommended as standard of care management of cancer-associated thrombosis. Due to limitation of LMWH, there are attractive alternative anticoagulant i.e direct oral anticoagulants (DOACs) consist of factor Xa inhibitors (rivaroxaban, apixaban and edoxaban) and direct thrombin inhibitors (DTI) (dabigatran). One of the benefit of DOACs is do not require routine laboratory monitoring. However, assessment of DOACs exposure and anticoagulant effect may useful in various clinical condition. There are laboratory tests may provide the information such as global assays, factor Xa inhibitor (anti-Xa chromogenic assay) and DTI assay [diluted thrombin time (dTT), chromogenic anti-Fila assay, ecarin clotting time (ECT), ecarin chromogenic assay (ECA)]. It is important to know timing for sampling, doses of DOACs, expected plasma concentration (C_{min} and C_{max}) and characteristic of laboratory tests. Creatinine clearance (CrCl) and liver function test are needed to avoid drug accumulation due to clearance and excretion of some anticoagulants dependent on kidney and liver function. In addition, examination of coagulation activation, fibrinolysis markers and blood activation markers should be considered to monitor blood activity and thrombosis process. Anticoagulation is important issue dealing with conventional and new regimen of anticoagulant. Varied laboratory tests are offer to assess the exposure and effect of the anticoagulant. The better understanding of pre-, analytical and post analytical problem will provide a better information to minimize morbidity and mortality of cancer-associated thrombosis patients, especially. Keywords: Cancer, thrombosis, LMWH, direct oral anticoagulants, anti-FXa chromogenic assay, ecarin clotting time

Congenital hypothyroid screening in Indonesia

Ina S. Timan
Clinical Pathology Department, Faculty of Medicine University of Indonesia - Cipto Mangunkusumo National Referral Hospital, Jakarta

The thyroid gland is an endocrine gland in the front of the neck. Its function is to secrete thyroid hormones which influence the body metabolism, protein synthesis, cognitive and physical development. Thyroid hormone are synthetized from thyrosine and iodine. It is regulated by the thyros stimulating hormone (TSH) which is secreted by the anterior pituitary and also influenced and regulated by the thyrotropine releasing hormone (TRH) produced
Thyroid disease is the second most frequent endocrine diseases after diabetes finding in daily clinical practice. Thyroid dysfunction represents continuum from asymptomatic biochemical changes to clinically symptomatic disease. In rare cases, it can produce life-threatening complications, such as myxedema coma or thyroid storm. In general, thyroid diseases can be diagnosed through history taking and clinical findings, laboratory and radiological examinations. For evaluating thyroid function needs serum thyroid hormones (thyroxine $[T_4]$ and triiodothyronine $[T_3]$) and thyroid stimulating hormone (TSH) measurement. Serum TSH examination is used for screening of thyroid dysfunction. If serum TSH level is normal that mean thyroid function is normal. If any abnormality of serum TSH, it should be followed by serum $T_3$ examination. By both serum TSH and $T_4$ examinations could be diagnosed several thyroid dysfunctions: (a) overt hyperthyroidism (elevated $T_4$ or $T_3$, and low TSH [<0.1 mIU/L or undetectable]; (b) overt hypothyroidism (low $T_4$ and elevated TSH [>4.5 mIU/L]); (c) subclinical hyperthyroidism (normal $T_4$ or $T_3$, and clearly low TSH [<0.1 mIU/L, severe case] or low but detectable [0.1-0.4 mIU/L, mild case]); and (d) subclinical hypothyroidism (normal $T_4$, and mild elevated TSH (4.5-10.0 mIU/L) or markedly elevated TSH (>10 mIU/L).

In United State is estimated 5% of women and 3% of men have subclinical thyroid dysfunction, and approximately 0.5% of population have undiagnosed overt thyroid disease. In several clinical studies showed that subclinical hypothyroidism was related to all-cause mortality, coronary heart disease mortality, atrial fibrillation, and reduced bone mass. Overt thyroid disease is associated with negative cardiovascular, musculoskeletal, dermatologic, gastrointestinal, and other effects, but clinical manifestations are highly variable and depend on the severity of thyroid abnormalities. Thyroid screening could identify persons with subclinical as well as undiagnosed overt thyroid dysfunction who could potentially benefit from treatment to reduce the risk for adverse health outcomes.

Therapy for subclinical hypothyroidism generally is addressed in people 70 years or younger with TSH level at least 10 mIU/L, although benefit long-termly unproved. For person with TSH level <10 mIU/L or over 70 years old, therapy is based on individual factors, such as the present of clinical finding of hypothyroidism, positive thyroid peroxidase antibody, or increase risk of cardiovascular due to dyslipidemia. Subclinical hypothyroidism may develop progressively to become overt hypothyroidism, especially in person with TSH level <0.1 mIU/L. Subclinical hypothyroidism, although does not develop progressively, causes poor outcomes such as cardiovascular diseases (atrial fibrillation, heart failure, coronary heart disease), loss bone density, fracture, and dementia especially people aged over 65 years with severe disease. Although there were not randomized clinical trial based guidelines, professional organizations recommend in people with subclinical hypothyroidism should be treated in over 65 years and menopause women, especially with TSH level less than 0.1 mIU/L. For people with overt hypothyroidism and hyperthyroidism, therapy must be given based on recommendation or guideline by professional organizations.

Screening and treatment of thyroid dysfunction

Ketut Suastika

1 Division of Endocrinology and Metabolism
Department of Internal Medicine, Faculty of Medicine, Udayana University-Sanglah Hospital, Denpasar, Indonesia

The Role of hs-Trop I in Acute Coronary Syndrome and Cardiovascular Disease

Daniel P.L. Tobing
National Cardiovascular Centre, Harapan Kita Hospital, Jakarta, Indonesia
Department of Cardiology and Vascular, Faculty of Medicine, Universitas Indonesia

A rapid and accurate diagnosis is critical in patients with presumed acute coronary syndrome for the initiation of effective evidence-based medical management and revascularization. The third universal definition of myocardial infarction defines an acute myocardial infarction (AMI) as evidence of myocardial necrosis in a patient with the clinical features of acute myocardial ischemia, and defines the 99th percentile of cardiac troponins as the decision value for AMI (1). Clinical assessment, 12-lead ECG and cardiac troponin (cTn) I or T form the diagnostic corner stones of patients with acute onset chest pain. Contemporary sensitive and high-sensitivity cardiac troponin (hs-cTn) assays have increased diagnostic accuracy in patients with acute chest pain in comparison with conventional cardiac markers (2). Rapid rule-in and rule-out diagnostic strategies for patients with chest pain in the emergency department (ED) are now available, and help clinicians to risk stratify patients and enable discharge of those deemed to be at very low risk. In principle, this improves assessment and makes ED care more cost effective (3). Furthermore, novel hs-cTn assays are able to quantify troponin in the majority of healthy individuals. Although hs-cTn assays are very sensitive, they are less specific for AMI when using the 99th percentile as a single cutoff level. Even when a troponin rise is consistent with a diagnosis of AMI, other cardiac diseases such as myocarditis, Takotsubo cardiomyopathy or shock can produce significant changes of troponin as well. Interpretation of the results is heavily dependent on the clinical context in which it is requested. High-sensitivity cardiac troponin testing may improve the risk stratification and diagnosis of myocardial infarction, but concentrations can be challenging to interpret in patients, and the effectiveness of testing in this group is uncertain.

Assay sensitivity also has a role in prognostication, in that low troponin concentrations exceeding the 99th percentile in and following an episode of acute coronary syndrome (ACS) identify patients at higher risk for an adverse event. Recent studies have indicated that detectable concentrations of cardiac troponin below the 99th percentile may be used for long-term risk stratification. This finding was observed in both acute and non-acute settings, suggesting that low levels of cardiac troponin may have prognostic importance across the spectrum of cardiovascular disease (CVD).
The fast development of medical sciences and technology leads to the emerging of new laboratory methods able to support clinical management of various diseases. Disease management in the era of modern medicine should meet the "5Ps" criteria, which include prevention, prediction, precision, personalized and participative, applicable for example in the management of cancer, reproductive medicine and immunotherapy.

To take cancer management as an example, cancer diagnosis is currently established through histopathology characterization using tissue biopsy specimen. This is accepted world wide as the gold standard of cancer diagnosis. However, tissue biopsy is often risky and invasive, may not always representative for the entire variety of malignant clone (tumor heterogeneity), frequently not enough tissue is available, multiple sampling for monitoring is not feasible, and can not be used to predict distant metastasis.

To overcome those issues, in the last few years, experts have developed a new method of sampling, which is now known as liquid biopsy. Compared to tissue biopsy, liquid biopsy is a non-invasive procedure, may represent different localization of malignant clone, is easily repeatable and highly reproducible and provide real time monitoring of disease. But unfortunately there is still lack of standardization.

The discussion will include, the advantages and disadvantages of tissue biopsy and liquid biopsy, assays using liquid biopsy, clinical significance of circulating tumor cells (CTC) and circulating tumor DNA (ctDNA/ ccfDNA) in the management of cancer, and how to use liquid biopsy to measure the power of the immune cells in cancer immunotherapy.

Key words: tissue biopsy, liquid biopsy, CTC, ctDNA

Early detection and prevention of stunting in children

I Gusti Lanang Sidiartha¹
¹ Department of Child Health, Medical Faculty, University of Udayana, Bali, Indonesia

Stunting is disruption of linear growth marked with the short stature, which is length/height-for-age less than -2 SD of WHO Growth Standard that is directly caused by chronic under nutrition. It is still a major problems of public health, globally as well as in Indonesia. Globally, almost 162 million children under five are classified as stunting. In Indonesia, approximately 37.2% children under five are suffering from stunting in 2013 according to the result of Riset Kesehatan Dasar (RISKESDAS). Stunting problems in children, especially in the first 1000 days of life is not only because of the short of the body but more dangerous is associated with the high morbidity and mortality, lower cognitive ability, as well as provide future with lower ability of work and productivity. Early detection of stunting is done with monitoring growth regularly in every month using a World Health Organization (WHO) Growth Standard and needed to be alert when indicate the state of failed to grow or also called growth faltering. The prevention of stunting is done with optimize the provision of exclusive breastfeeding and the provision of complementary foods timely, adequately, properly, and safe.

Key words: stunting, child, breast milk.

Laboratory evaluation of growth and developmental delay

Uleng Bahrun¹
¹ Department of Clinical Pathology, Faculty of Medicine, Hasanuddin University

Developmental delay (DD) is defined as significant delay (more than two standard deviations below the mean) in one or more of the following developmental domains: gross/fine motor, speech/ language, cognition, social/personal, and activities of daily living. Global Development Delay (GDD) is defined as significant delay in two or more developmental domains, and associated with Intellectual Disability (ID) and Autism Spectrum Disorder (ASD). Stunting, the impaired growth of children whose height for age is below minus two or minus three standard deviations (moderate and severe stunting) from the median of the WHO Child Growth Standards. Stunting, which is usually associated with development delay and development disability, caused by poor nutrition, repeated infection, and inadequate psychosocial stimulation. This condition associated with an underdeveloped brain with long-lasting harmful consequences, including diminished mental ability and learning capacity, poor school performance in childhood, reduced earnings and increased risks of nutrition-related chronic diseases in future. Establishing the cause of developmental delay/disability is important because a specific diagnosis may assist in prognosis, counselling parents as to the risk of other children being similarly affected, and identification of therapeutic and educational interventions. Elements for evaluation including history, physical and neurological examination, imaging and laboratory investigation. Laboratory testing should be considered as part of a comprehensive evaluation to assist with decisions about treatment and management, should be selective and rational, and determined by history & physical examination. For children whose condition remains unexplained, the first-line genetic investigations are a fragile X test and a microarray test. Other testing including FMR1 (FXS) testing, karyotyping, and metabolic testing (serum amino acids; urine organic acids, acylcarnitines, mucopolysaccharides; serum glucose, bicarbonate, lactate, pyruvate, ammonia, creatine kinase). Second-line testing including MECP2 and TPEN testing and other testing. These aspect of laboratory investigation of children with developmental delay/disability will be discussed further in this paper.

Keyword: Developmental Delay, Intellectual Disorder, Stunting, Chromosome Analysis, biochemical and metabolic investigation

Situasi terkini infeksi HPV

Andrijono¹
¹ Oncology Sub-Division of Obstetrics and Gynecology Department, Faculty of Medicine, Indonesia University, Dr. Cipto Mangunkusumo Hospital, Jakarta

Background: Among all human cancers, 15% are caused by viral infections. Several cancer could be course by HPV infection, risk develop cancer increase in HPV infection persistent. At present, the screening program starts with a smear test. The sensitivity smear about 60%, big number of smear false negative. HPV-DNA test has sensitivity more than 90%, HPV-DNA test good candidate be a best screening testing. New HPV-DNA tests are self vaginal collecting sample, HPV-DNA test could be possible to detect in blood and urine, because that HPVs might in some circumstances be spread via a blood route.
Materials and methods: Literature review

Result: HPV-DNA test in urine, the sensitivity about 87% and specificity of 94%. High risk HPV in urine had sensitivity about 77% (68% to 84%) and specificity of 88% (58% to 97%). Urine detection of HPV 16 and 18 had a pooled sensitivity of 73% (56% to 86%) and specificity of 98% (91% to 100%). Overall HPV-DNA positive in 34.2% (41/120) of plasma samples. The most frequently identified genotypes were HPV 45 (46.3%), HPV-51 (29.6%), and HPV 16 (18.5%).

Conclusion: Urine can be used as specimen for HPV-DNA test.

Laboratory diagnosis of human papilloma virus

Sri Hartini¹
¹ Clinical Pathology Department, Dharmais Cancer Hospital/ National Cancer Center, Jakarta

HPV has a double-stranded, circular and closed DNA with a length of nearly 8,000 base pairs. This genome is wrapped with DNA capsid which is a polynucleotide consisting of early regions (E1, 2, 4, 5, 6, 7) and late region (L1, L2). With sequencing techniques around 120 genotypes have been identified. Based on the biological properties and oncogenicity, HPV are classified into 2 groups, namely low-risk HPV (LR-HPV) which cause skin lesion and high risk HPV (HR-HPV) which causes malignancy in various organs such as head and neck cancer, skin cancer, anal cancer and cervical cancer. Laboratory diagnosis of HPV infection can be done starting from the microscopic method to get the form of coilocytosis, detect the presence of viral nucleic acid in the patient's sample / material or known as HPV DNA test to determine the presence of HPV HR or LR by non PCR method to PCR method or Genotyping DNA HPV examination if we want to know more detailed HPV genotypes and E6 / E7 HR-HPV mRNA examination. The PCR method has several advantages such as increasing accuracy, reproducibility, requiring the same sample with a small amount of Liquid Pap test so that it can be done simultaneously with a Pap test and having internal Quality Control, among others by globin β detection or other “house keeping gene”.

In addition to epidemiological studies, the clinical application of HPV DNA Genotyping test is to detect high risk groups of malignancy. Especially in cervical cancer screening, Pap tests that are combined with HPV DNA in women over the age of 30 can identify more high-risk women. HPV DNA examination also can be used to monitor persistent HR-HPV infection and monitor the successful treatment of pre-cancerous lesions. Considering that the Pap test has a low sensitivity in predicting the risk of cervical cancer, in various countries, cervical cancer screening programs are being developed with HPV Genotyping DNA as a primary / early examination. Considering HR HPVs is a major risk factor for cervical cancer, HR-HPV DNA testing should be used in screening and can be develop as a primary tool screening for Cervical Cancer.

Key words: HR-HPV; PCR Method; Cervical Cancer

Overview of iron deficiency anemia

Ketut Suesa¹
¹ Hematology-Oncology Division, Internal Medicine Department, Faculty of Medicine, Udayana University, Sanglah General Hospital, Bali

Iron deficiency anemia (IDA) affects over 12% of the world's population, especially women of childbearing age, children, and individuals living in low- and middle-income countries. All patients with iron deficiency anemia and most patients with iron deficiency without anemia should be treated. The absolute prevalence depends on the population studied. Major causes of iron deficiency include blood loss and reduced absorption (eg. due to celiac disease, helicobacter pylori, gastritis, or bariatric surgery). Clinical manifestations of iron deficiency depend on severity and may include symptoms of anemia, pica, and restless legs syndrome. A number of tests are available for evaluating iron status. Serum ferritin is the most useful, especially in uncomplicated patients (eg, those without a chronic inflammatory state or multifactorial anemia). More complex patients may require additional testing including TSAT, soluble transferrin receptor (sTfR) or sTfR-ferritin index, reticuloocyte hemoglobin content (CHr), or bone marrow iron stain. A response to a therapeutic trial of iron administration may be helpful in confirming the diagnosis of iron deficiency anemia. Iron deficiency anemia was treated with oral iron due to the ease of administration. However, the availability of Intrevenous (IV) iron formulations with improved toxicity profiles has lowered the threshold at which many patients would prefer an IV preparation. Transfusion of red blood cells especially for those IDA with severe cardiovascular symptoms. When indication lack of a response may be due to an alternative diagnosis or to conditions such as celiac disease or H. pylori infection. Patients with iron deficiency or iron deficiency anemia should have thorough history and examination for possible causes of the deficiency, which may precede the final diagnosis.

Keywords: IDA, diagnosis, treatment for IDA

The role of content reticuloocyte hemoglobin content to early diagnosis iron deficiency anemia

Delita Prihatni¹
¹ Clinical Pathology Department, Faculty of Medicine, Padjadjaran University, Dr. Hasan Sadikin Hospital, Bandung

Iron Defisiensi Anemia (IDA) occurs due to an imbalance between intake, absorption and iron secretion in the body. The ADB case, up until now, has a high prevalence in Indonesia, can occur at any age, and can be accompanied by abnormalities or various underlying diseases. Laboratory examination is an accurate detection method for detecting ADB cases. Various laboratory parameters are available for ADB diagnosis. From the conventional parameters, the recommended combination of Ferritin and Saturation Transferin measurement, but also can be influenced by various factors that interfere with the interpretation. Currently more sensitive and specific parameters are available such as Reticuloocyte Hemoglobin content (CHR) to diagnosis. The CHr parameter can detect early phase of functional IDA cases in the Erythropoiesis Fe Deficiency phase.

Keywords: IDA, conventional parameters and CHr
ABSTRACT

Indication, initiation and monitoring of hemodialysis

Yenny Kandarini

Division of Nephrology and Hypertension, Department of Internal Medicine University of Udayana- Sanglah General Hospital Denpasar

Hemodialysis (HD) is one of renal replacement therapy (RRT) modalities which is indicated for Stage 5 Chronic Kidney Disease (CKD) patients. Number of patients receiving RRT have risen over the last decade. This increasing number of patients receiving RRT is caused by complex of factors such as diabetes mellitus incidence and prevalence that may lead to End-Stage Renal Disease (ESRD), besides the effectiveness of CKD management to slow the progression to ESRD.

Hemodialysis is the main renal replacement therapy in most countries. Currently more than 2 million patients are treated with HD in about 28,500 dialysis units worldwide. Based on Indonesian Renal Registry report in 2017, there were 9335 dialysis machines and 77892 patients on HD. Regardless of substantial advances in CKD understanding and dialysis technology improvements, the annual mortality of HD patients varies from 5% to 25% internationally, depending on demographic and possibly genetic factors.

Indications for dialysis initiation in Stage 5 CKD patients are as follows: uremic pericarditis, encephalopathy, muscle cramps, anorexia, nausea, malnutrition, electrolyte abnormality (hyperkalemia) and refractory fluid overload after other medicine.

The aim of the HD system is to deliver blood in a safe manner from patient to the dialyzer, to allow removal of uremic toxins and excess fluid, and to deliver clean blood back to the patient. An adequately treated HD patient is characterized as physically active, well nourished, euvoletic, and normotensive with a maintained good quality of life and life expectancy. In order to reach the goal of HD, every HD patient has to do regular monitors toward clinical status, laboratory, nutrition standards and clearance status. Patients also have to be checked for medical complications due to HD or CKD itself.

Keywords: Chronic Kidney Disease (CKD), hemodialysis, indication.

Laboratory diagnosis of chronic kidney disease

Purwanto AP

Clinical Pathology Department, Medical Faculty Diponegoro University Semarang

Chronic kidney disease (CKD) is a major public health problem worldwide, with an increasing incidence and prevalence, poor outcomes, and high cost. There is an even higher prevalence of earlier stages of chronic kidney disease. Increasing evidence, accrued in the past decades, indicates that the adverse outcomes of chronic kidney disease, such as kidney failure, cardiovascular disease, and premature death, can be prevented or delayed.

Outcomes of chronic kidney disease include not only kidney failure but also complications of decreased kidney function and cardiovascular disease. Current evidence suggests that some of these adverse outcomes can be prevented or delayed by early detection and treatment.

Early diagnosis of CKD is essential to prevent severe and life-threatening kidney damage. This can be achieved by performing simple and inexpensive laboratory tests, along with proper management and interpretation of the results. Unfortunately, chronic kidney disease is underdiagnosed and undertreated.

The criteria of chronic kidney disease are kidney damage for more than three month, defined by structural and functional abnormalities of the kidney with or without decreased GFR. This damage manifest by either pathological abnormalities or marker of kidney damage including abnormalities in the composition of the blood or urine. GFR result is less then 60 mL/minute/1,73 m3 for more three months with or without kidney damage.

Diagnosis of chronic kidney disease is traditionally based on pathology test results and etiology. The laboratory diagnosis of chronic kidney disease (CKD) is a simple and cost-effective procedure that allows the detection of early stages of the disease, which is essential to avoid kidney damage and a life threatening event.

National Kidney Foundation Practice Guidelines for Chronic Kidney Disease using these parameter to diagnose: serum creatinine, albumin-creatinine, examination of the urine sediment, serum electrolytes (sodium, potassium, chloride, and bicarbonate), urinary concentration or dilution (specific gravity or osmolality), urinary acidification (pH), calculating the estimated glomerular filtration rate (eGFR), and imaging of the kidney.

Key words: chronic kidney disease, criteria, laboratory diagnosis.
HEMATOLOGY

Calcium levels in insufficiency, deficiency and normal vitamin D in thalassemia major

Yugi Tri Hutomo¹, Ade Hariza Harahap², Bidasari Lubis², Heman Hariman¹
¹ Department Of Clinical Pathology, Division Of Hematologi, School Of Medicine, University Of North Sumatra/Haj Adam Malik Hospital Medan
² Department Of Paediatrics, Division Of Haematologi, School Of Medicine, University Of North Sumatra/Haj Adam Malik Hospital Medan

Background: It is well documented B thalassemia major may produce low level of vitamin D. Nevertheless, it is still unclear whether the calcium level acts in similar way with vitamin D. This is to show whether calcium level is operated in similar way with vitamin D.

Aim of the study: So, the aim of study to find out how much depression vitamin D and calcium as express in the degree of three deficiency.

Methods: 35 patients were recruited in the study. 6ml of vena blood was taken and spun at 3000g for 20 minutes to produce serum, for the investigation of 25 OH Vitamin D and total calcium, using the ELFA and Metallocromic dye (Arsenazo III) respectively. Vitamin D deficiency is regarded when level <20, insufficiency 20-30, normal 30-100ng/ml respectively

Result: Mean ±S.D of deficiency patients 8,58±0,79, insufficiency 8,75±0,71, normal 8,33±0,77ng/ml respectively (P>0,05).

Conclusion: There is no different of calcium in patients with vitamin D deficiency, insufficiency and normal vitamin D status in patients with B thalassemia major (P>0,05). This demonstrated that the level of calcium in B thalassemia major is not controlled solely by vitamin D.

Keywords: Calcium, Thalassemia, Vitamin D

The influence of storage at 4°C on non-washed packed red cells

Pesalmen Saragih¹, Ida Adhayanti², Zulfikar Lubis², Herman Hariman²
¹ Postgraduate Program in Clinical Pathology Specialization, Faculty of Medicine, Universitas Sumatera Utara, Medan.
² Department of Clinical Pathology, Faculty of Medicine, Universitas Sumatera Utara/Haj Adam Malik Hospital, Medan.
³ Blood Transfusion Unit, Haj Adam Malik Hospital, Medan.

Background: There is still no fixed confirmation of how long the non-washed packed red cells (PRC) could be stored at 4°C without loosing its activity. Some centres put their criteria that PRC could be stored only for 1 day, some other several days until one week time. So, the aim of this study is to clarify of how long the non-washed PRC could be stored at 4°C without loosing its activity.

Methods: 30 whole blood bags were recruited in this study. They are ordered by physicians for the request of PRC. The bags were spun at 4.000 RPM for 15 minutes. The PRC was tapped for 3 cc of blood on day 1, 3, 5, 7 for the investigation of haemoglobin (Hb), haematocrit (Ht), and blood glucose.

Results: After day-1 tapping, PRC was then stored at 4°C. Another tappings were carried out on day 3, 5, 7. Result showed that the Hb and Ht increased from day-1 to day-7 (P < 0,001), however the blood glucose showed a decrease from day-1 to day-7 (P < 0,001) but its value is still within normal range. The Hb correlates with Ht, r = 0.96 (p<0.001) but not with blood glucose ; r = -0.048 (p>0.05).

Conclusion: The non-washed PRC could be stored at 4°C for 7 days without losing its activity. There is no correlation between the increase of Hb, Ht, and the levels of blood glucose.

Keywords: PRC, storage, Hb, Ht, blood glucose.

Hypercoagulation state in major B-thalassemia patients in H. Adam Malik Hospital Medan

Jane Tetraulina Silitonga ¹, Adi Koesoema Aman ², Bidasari Lubis ²
¹ Department of Clinical Pathology, Faculty of Medicine USU /H.Adam Malik Hospital, Medan
² Department of Pediatrics Faculty of Medicine USU /H.Adam Malik Hospital Medan

Background: Thalassemia is the most common hereditary blood disorders in the world and in Indonesia. Major B-thalassemia is classified as Transfusion Dependent Thalassemia(TDT). Specific changes in the composition of red cell membrane lipids and hemosiderosis may lead to hypercoagulation conditions.

Methods: This was an observational analytic study with cross sectional design, was performed on 18 major beta thalassemia patients in H.Adam Malik Medan Hospital and 18 normal controls, who met the study criteria, then examined for their Protein C, Protein S, AntithrombinIII and D-dimer. Assessment also carried out among groups of patients based on their transfusion frequencies and serum ferritin.

Results: This study found the average of Protein C (40.61 ± 9.56 vs 80.19 ± 24.77)%; Protein S (32.16 ± 18.39 vs 58.3 ± 37.71)%; ATIII (79.75 (30-104.30) vs 88.7 (64.5 - 103.8)% and D-dimer (170,50-7500) vs 87 (17-466) ng/ml in major B-thalassemia patients and normal controls. Significant differences were obtained (p <0.05) between levels of Protein C, Protein S and D-dimer in patients with B-thalassemia and normal controls. Protein C among patients who infrequently and frequently undergo blood transfusions is 34.88 ± 8.6 vs. 45.19 ± 7.8 with p <0.05. Significant differences also obtained between Protein C, Protein S and D-dimer in patients with serum ferritin level <2500 ng/ml and ≥ 2500 ng/ml.

Conclusion: Significant changes were found in anticoagulation proteins of B-major thalassemia patients. Regular and frequently blood transfusions and chelation therapy should be emphasized for thalassemia major patients, because they affect anticoagulation protein levels.

Keywords: Protein C, Protein S, Antithrombin, D-Dimer, Major B-thalassemia
Evidence that thrombin inhibition by dabigatran is not an absolute inhibition

Enna Berkah Sari¹, Rapina Ambarita¹, Zulfikar Lubis¹, Herman Hariman¹
¹Department of Clinical Pathology, Division of Haematology, School of Medicine, University of North Sumatera / Hajj Adam Malik Hospital Medan.

Introduction: There is evidence to suggest that dabigatran, a direct oral anticoagulant inhibits thrombin through an active site of thrombin without a need of co-factor which mean that the inhibition will not produce reduction of fibrinogen. However, reports demonstrate that bleeding may happen in spite of claims that dabigatran does not produce bleeding.

Aims of study: To prove that the claims that dabigatran does not produce fibrinogenolysis is true.

Methods: 22 normal volunteers were recruited in this study. They were given 75mg dabigatran and blood samples were collected before and 2,5 hours after dabigatran (peak time of dabigatran in vivo) and put in to 3,8% trisodiumcitrate. All samples were tested for fibrinogen by Clauss method, and fibrinogen tests were repeated 24hours later.

Result: Mean ± SD of fibrinogen 341,5 ± 69,6 mg/dl before Dabigatran, 306,9 ± 124,6 mg/dl at 2,5 hr post Dabigatran (p=0,05) and 284,6 mg/dl ± 76,1 at 24hr post Dabigatran (p<0,05).

Conclusion: There was a reduction of fibrinogen 24hr after Dabigatran 75 mg treatment. This finding should be put into great attention as 75 mg is much lower than the recommended therapeutic dose (150-300 mg/dl).

Key words: Dabigatran, thrombin inhibition, fibrinogen.

Benefit of paclitaxel in cases undergoing percutaneous coronary intervention as show in the levels of antithrombin-III

Kholilah Nirwana Nasution¹, Dewi Yanti Handayani¹, Herman Hariman¹, Nizam Akbar²
¹ Department of Clinical Pathology, School of Medicine, University of North Sumatera/Haj. Adam Malik Hospital, Medan, Indonesia.
² Department of Cardiology and Vascular Medicine, School of Medicine, University of North Sumatera/Haj. Adam Malik Hospital, Medan, Indonesia.

Background: This study is to clarify that chemoteraphy-based Drug Eluting Stent (DES) Paclitaxel reacts better for Percutaneus Coronary Intervention (PCI) compared to another kind of stent.

The Aim of the study: To find out weather Paclitaxel stent has better Antithrombin III (AT-III) result.

Method: 15 cases under going PCI were recruited for this study. 9 out of 15 received stent with Paclitaxel, while the another 6 cases received metal stent. Blood samples were taken from the median vein for the measurement of AT-III 1 hour before and 4 hour after PCI.

Result: There is significant difference of the levels of AT-III activity before PCI compared to the group after PCI (p<0,05). However, the AT-III activity before PCI and after PCI in patients taking DES with Paclitaxel showed no statistical difference (p>0,05). Nonetheless, the level of AT-III activity in the group using ordinary metal stent before and after PCI showed significant difference (p<0,05). This showed that Paclitaxel eluted in the stent does not produce significant difference before and after PCI which showed that there is no evidence of thrombin generation as reflected by no increase in AT-III activity.

Conclusion: This demonstrated that stent using Paclitaxel is better than ordinary metal without eluting substance.

Key words: Percutaneous Coronary Intervention (PCI), Antithrombin (AT), Drug Eluting Stents (DES), Metal Stents, Paclitaxel

Levels of protein C, S protein, and antithrombin III in acute ischemic stroke patients in haj adam mallik hospital medan

Jenie Erawati Muchti¹ Yuneld Anwar² Adi Koesoema Aman³
¹ Department of Clinical Pathology, School of Medicine, University of North Sumatera/Haj Adam Malik Hospital Medan, Indonesia
² Department of Neurology, School of Medicine, University of North Sumatera/Haj Adam Malik Hospital Medan, Indonesia
³ Division of Haematology, Department of Clinical Pathology, School of Medicine, University of North Sumatera/Haj Adam Malik Hospital Medan, Indonesia

Background: Ischemic stroke is a clinical syndrome with rapidly develop loss of brain function due to disturbance in the blood supply to the brain, due to ischemia (lack of glucose and oxygen supply) caused by thrombosis or embolism. The role of natural anticoagulants Protein C, Protein S and Antithrombin III in ischemic stroke is still not widely known. It is important to look at the levels of Protein C, Protein S and Antithrombin III before the occurrence of ischemic stroke.

Method: This study was a longitudinal prospective method carried out in H. Adam Malik General Hospital Medan, from January to May 2018 in 21 acute ischemic stroke patients with three times of sampling, namely on day 1, 3 and 7.

Results: 21 Patients who participated in the study were 12 men (57.1%), 9 women (42.9%). The results of Repeated Anova test and Friedman test found no significant differences on days 1, 3 and 7 for Protein C, Protein S and Antithrombin III. Correlation test between each Protein C, Protein S and Antithrombin III uses a Coatron A4 device, Protein C and Antithrombin III with chromogenic assay principles and Protein S with clotting assay principles.

Results: 21 Patients who participated in the study were 12 men (57.1%), 9 women (42.9%). The results of Repeated Anova test and Friedman test found no significant differences on days 1, 3 and 7 for Protein C, Protein S and Antithrombin III. Correlation test between each Protein C, Protein S and Antithrombin III uses a Coatron A4 device, Protein C and Antithrombin III with chromogenic assay principles and Protein S with clotting assay principles.

Conclusion: Average levels of Protein C, Protein S and Antithrombin III according to statistical results there is no significant differences on days 1, 3 7. It is recommended that samples be taken for a longer period of time.

Key words: Acute ischemic stroke, Protein C, Protein S and Antithrombin III
ABSTRACT

Pretreatment Neutrophil-to-Lymphocyte ratio (NLR) and Platelet-to-Lymphocyte ratio (PLR) as a predictive value of hematological markers in Cervical Cancer

I Putu Yuda Prabawa1,2, Agha Bharagh2, Firdy Liwang3, Deasy Ayunintyag Tando4, Aditya Leonard Tando5, Anak Agung Wiradewi Lestari2, I Nyoman Gede Budiana7
1 Master Program in Biomedicine, Faculty of Medicine, Udayana University, Bali, Indonesia
2 Department of Clinical Pathology, Sanglah General Hospital, Udayana University, Faculty of Medicine, Bali, Indonesia
3 Post graduate student, Faculty of Medicine, Udayana University, Bali, Indonesia
4 Post graduate student, Faculty of Medicine, Sam Ratulangi University, Manado, Indonesia
5 Public health officer, Health Department of North Timor Tengah, East Nusa Tenggara, Indonesia
6 Post graduate student in Public Health, Faculty of Medicine, Dentistry and Health Sciences, University of Melbourne, Australia
7 Department of Obstetrics and Gynecology, Sanglah General Hospital, Faculty of Medicine, Udayana University, Bali, Indonesia

Background: Inflammation represents a pivotal role in the progression of cervical cancer. The hematological markers of inflammation in complete blood count (CBC) panel are potentially useful in determining the prognosis of the disease.

Objective: The study aimed to investigate whether the pretreatment neutrophil-to-lymphocyte ratio (NLR) and platelet-to-lymphocyte ratio (PLR) could be used in predicting the staging of cervical cancer.

Methods: A retrospective cross-sectional study involved 282 patients with cervical cancer who was enrolled at Sanglah General Hospital for five years (2013-2017). The histopathological records and complete blood counts (CBC) of the patients were collected and analyzed using SPSS ver. 16 software. FIGO stage I–II and III–IV was classified as early and advance stage respectively.

Results: The median NLR and PLR were significantly higher in the advance stage compared with early stage (7.58 (1.36-33.20) and 247.89 (97.10-707.11); p-value = 0.001). A strong positive correlation was found between the staging of cervical cancer and NLR (r=0.638) and PLR (r=0.668). The AUC, sensitivity, and specificity value of NLR and PLR were 0.803 (82%; 71%) and 0.716 (72%; 70%). Advanced stage of cervical cancer was found in high NLR (adjusted OR: 9.02; 95%CI=2.42-33.64; p=0.001) and PLR (adjusted OR = 2.47; 95% CI = 1.45-4.85; p = 0.032)

Conclusion: Increased pretreatment NLR and PLR values may be a useful information in predicting the staging of cervical cancer.

Keywords: Cervical cancer, Neutrophil-to-lymphocyte ratio, Platelet-to-lymphocyte ratio, staging

A rare case of HB H disease caused by compound heterozygous for α thalassemia and HB quong sze in Chinese Indonesian proband

Nyoman Suci Widyastiti1, Ita Margareth Nainggolan2,3, Edward L Kurnia1 Imam Budiwiyono1
1 Clinical Pathology Department Faculty of Medicine Diponegoro University, Semarang
2 Eijkman Institute for Molecular Biology, Jakarta
3 Clinical Pathology Department Faculty of Medicine Atma Jaya University, Jakarta

Background: Hemoglobin H (HbH) disease is alpha thalassemia characterized by inactivation of three of four α-globin genes due to deletions with or without non-deletional α-thalassemia. Hb Quong Sze (Hb QS) is a very rare non deletional α-thalassemia in Indonesia caused by a CTGCGCG nucleotide substitution codon 125 of α2globin gene generating highly unstablehemoglobin. Compound heterozygosity for HB QS and Southeast Asian double α-globin gene deletion (−4.0) result in accumulation of β-globin tetramers, causing hemolytic anemia.

Case Description: A 49 years old Chinese Indonesian female was assessed for thalassemia screening. Phenotype of the proband was normal and only mild anemia was noticeable. She experienced blood transfusion 5 years ago due to sudden fall of hemoglobin level after malarial infection. Complete blood count found hemoglobin 8.3 g/dL, Mean Corpuscular Volume (MCV) 65.7 fl and Mean Corpuscular Hemoglobin (MCH) 17.1 pg. HB disease suggested by abundant HB H inclusion bodies in the red blood cells. Micropapillary hemoglobin electrophoresis result showed HbH 31.8 %, HbBart 0.4%, HbA 67.3% and HbA₂, 0.5%. Molecular studies were carried out using multiplex polymerase chain reaction (PCR) methodand the common α-thalassemia (−4.0) was detected in one allele. Direct sequencing analysis of the α1 and α2 globin genes revealed Hb QS in the other allele.

Conclusion: Non deletional Hb H disease due compound heterozygous of HB QS with Southeast Asian double α-globin gene deletion (−4.0) has a very low incidence in Indonesia. Advanced molecular analysis should be performed to determine this rare mutation.

Keywords: Hb Quong Sze, HbH disease, α-thalassemia, α-globin gene, mutation

Background: Myasthenia Gravis (MG) is an autoimmune disease of the neuromuscular junction (NMJ) in which there are acetylcholine receptor antibodies that attack the synaptic membrane in the neuromuscular junction. The disease is characterized by symptomatic weakness that mainly appears in certain muscles and usually the response fluctuates with activity and rest. Use of short-term antibody therapy such as Therapeutic Plasma Exchange (TPE) is a priority for patients with more severe cases. Case: 31-year-old woman entered the Emergency Department (IGD) RSUP HAM on March 21, 2018 with complaints of shortness of breath, weak limbs, difficult to open the eyes and difficult to swallow. At the head encountered ptosis, dysphagia, inferior limb strength and superior dextra and sinistra got value 4. On examination of Repetitive Nerve Stimulation (RNS) got impression of Harvey Masland Positive Test

Discussion: The goal of MG treatment is to return the patient to normal functioning as soon as possible and minimize the side effects of the therapy given. TPE can remove circulating blood-circulating pathogenic antibodies, used in patients who will be entering or are in a critical period and also maximize the patient’s energy to be undergo thymectomy.

Conclusion: Based on anamnesis, neurologic examination and patient investigation were diagnosed with Myastenia gravis which improved general condition after TPE

Keywords: Myastenia gravis, neuromuscular junction, TPE
A man of 76 years age with autoimmune hemolytic anemia (AIHA) and clinical bronchopneumonia

Wiendayanthi Ni¹, Tahono²
¹Clinical Pathology Residence, Faculty of Medicine, Sebelas Maret University, Surakarta;
²Department of Clinical Pathology and Laboratory Medicine, Faculty of Medicine, Sebelas Maret University and Clinical Laboratory Installation, dr. Moewardi Public Hospital, Surakarta

Introduction: Autoimmune hemolytic anemia (AIHA) is defined as an anemia resulting from increased destruction of red blood cells (RBCs) due to anti-RBC autoantibodies with or without complement activation. It is classified into warm antibody and cold antibody. The presence of autoantibodies can be analyzed with Direct Antiglobulin Test (DAT) / direct Coomb’s test and Indirect Antiglobulin Test (IAT) / indirect Coomb’s test.

Case: A 76-year-old man was referred from Wonogiri District Hospital with weakness, yellow eyes and congestion since 6 days prior to hospital admission due to blood abnormality requiring blood transfusion. Laboratory tests revealed Hb 6.0 g/dl; retikulosit 39.22 %; bilirubin 1.49 mg/dl; and LDH 626 ug/dl. The peripheral blood smear obtained normocytic normochromic anemia suspected for AIHA. Coombs test was positive with anti C3d: 2+ and anti IgG negative. Radiologic finding was infiltrate in the lung base.

Discussion: In our case AIHA finding is similar to previous studies in which there are decreased hemoglobin, reticulocytosis, hyperbilirubinemia and increased LDH as well as positive coomb test. Meanwhile the radiological finding revealed bronchopneumonia characterized by lung base infiltrate.

Conclusion: We diagnosed this patient with AIHA and clinical bronchopneumonia as supported by laboratory and radiological examination.

Keywords: Autoimmune hemolytic anemia (AIHA), warm antibody, cold antibody, Coombs test.

A 22 year old man with Bone Cyst And history of Afibrinogenemia

Dian AW¹, Tahono²
¹Clinical Pathology Residence, Faculty of Medicine, Sebelas Maret University, Surakarta;
²Department of Clinical Pathology and Laboratory Medicine, Faculty of Medicine, Sebelas Maret University and Clinical Laboratory Installation, dr. Moewardi Public Hospital, Surakarta

Introduction: Afibrinogenemia has an estimated prevalence about one in a million. The most common symptoms are bleeding of the umbilical cord, under the skin, mouth, muscle, gastrointestinal, genitourinary tract and central nervous system. Bone cyst is a rare complication of afibrinogenemia.

Case: A 22-year-old man with complaints of knee pain and swelling 4 years before entering the hospital. He has a history of afibrinogenemia with very low fibrinogen levels from the age of 10 and get cryopresipitate therapy. From the laboratory results during treatment, it is obtained that Prothrombin Time (PT) >300 seconds and activated Partial Thromboplastin Time (aPTT) >300 seconds. On radiological examination, it was obtained the description of Bone cyst in 1/3 proxymal as femur dextra.

Discussion: The diagnosis of afibrinogenemia in these patients is based on a very low history of fibrinogen examination and prolonged TT, PT and aPTT. The presence of intraosseous bleeding over time will form a thin fibrosis layer, calcium deposits in the wall of fibrosis and in some cases regress due to bone remodeling underlying bone cyst occurrence in cases of afibrinogenemia.

Conclusion. This patient was diagnosed for Afibrinogenemia with bone cyst complications.

Key Word: fibrinogen, afibrinogenemia, bone cyst

Reference interval for platelet and platelet indices in Indonesian adults using automatic hematology analyzer cell-dyn ruby

Luthfa Mudrika¹, Tri Ratnaningsih²
¹Postgraduate Program in Clinical Pathology Specialization, Faculty of Medicine, Nursing and Public Health Universitas Gadjah Mada, Yogyakarta
²Department of Clinical Pathology and Laboratory Medicine, Faculty of Medicine, Nursing and Public Health Universitas Gadjah Mada, Yogyakarta

Background: Complete blood count is a basic test that is required in almost of all clinical cases. Test result interpretation based on reference interval values is crucial for making diagnosis. Each laboratory is recommended to establish the reference interval value locally due to variation of population characteristics and geographic areas. This study aims to determine the reference interval for platelet dan platelet indices parameters in Indonesian adult subjects.

Methods: A total of 372 apparently healthy adult subjects (180 men and 192 women) were recruited to this study. Blood samples collected in K₂-EDTA tubes were analyzed using automatic hematology analyzer CELL-DYN Ruby. Subjects who had exclusion criteria or became outliers were removed. Reference intervals were counted using Medcalc software according to the methods recommended by CLSI C28-A2.

Results: It was 265 subjects (130 men and 135 women) aged between 21 - 40 years who fulfilled the inclusion criteria. These subjects consisted of 95.47% Malay ethnic and 4.53% Chinese-descent ethnic. Mean of platelet, MPV, PCT, and PDW were comparable between two groups (p = 0.975, p = 0.204, p = 0.615, and p = 0.324, respectively) thus the reference values for all subjects were platelet = 176 - 372.8 x 10³/µl, MPV = 5.68 - 9.57 fl, PCT = 0.13 - 0.27%, and PDW = 18.24 - 22.1 10³(GSD)

Conclusion: This study has determined the reference values for platelet and platelet indices parameters in Indonesian adult subjects using automatic hematology analyzer CELL-DYN Ruby.

Keywords: Reference interval, CELL-DYN Ruby, platelet, adult, Indonesia

Erythrocyte indices as screening Iron deficiency anemia in microcytic hypochromic anemia

Ervianti Abas¹, Tahono²
¹Clinical Pathology Resident, Faculty of Medicine, Sebelas Maret University, Surakarta
²Department of Clinical Pathology, Faculty of Medicine, Sebelas Maret University/Dr. Moewardi General hospital, Surakarta

Background: Anemia is a global health problem that affects of health, social and economic. Anemic conditions decrease the
The effect of physical readiness test on D-dimer levels in military member of Kodam I Bukit Barisan

Prathama1, Adi Koesoema Aman1, Nizam Zikri Akbar2
1Clinical Pathology Department, 2Faculty of Medicine, Sumatera Utara University, H. Adam Malik Medan

Background: Several reports and experiences show that when doing heavy exercise often occur complaints which direct the diagnosis towards Venous Thrombo Embolism (VTE) in the form of painful and swollen feet. This was due to hypercoagulation and resulted in VTE. The D-dimer level is a measure of clot formation and lysis resulting from the breakdown of fibrinogen and fibrin during fibrinolysis. Therefore this study aimed to see an increase in D-Dimer which is a marker of increased fibrinolysis.

Method: This study took a sample of blood from 30 soldier who was declared healthy. Sample is checked for D-Dimer 1 hour before and after the test. The physical readiness test is a standard to assess the readiness of soldiers in carrying out the tasks. Examination using Coatron machine with the Immuno Turbidimetric Assay method.

Result and discussion: 30 people are men with an average age of 19-22 years. D-Dimer showed a significant difference with a mean of 92.83 ± 49.62 SD before the test and after the test found a mean of 127.53 ± 57.75 SD with p = 0.001 (p <0.05).

Conclusion and suggestion: The increase in D-Dimer shows an increase in blood coagulation processes and fibrinolysis and can occur in individuals who often carry out heavy activities. D-Dimer and Doppler ultrasound screening should be carried out on a periodic check before carrying out the physical readiness test.

Keyword: Venous Thrombo Embolism, D-Dimer, physical readiness test

Raja Ibqal M Harahap1, Delita Prihatni2, Tiene Rostini2
1Clinical Pathology Resident, Faculty of Medicine Universitas Padjadjaran; 2Clinical Pathologist, Faculty of Medicine Universitas Padjadjaran.

Introduction: Thalassemia is an autosomal recessive disease. It occurs due to abnormalities in hemoglobin synthesis, causes imbalance of globin production. Identification of thalassemia’s carrier plays role to prevent disease’s inheritance. Diagnostic approaches regarding anemia, especially in the families are important, because they are prone to inherit the disease. This study was aimed to know compatibility of Mentzer, England and Fraser, Shine and Lal, and Srivastava indices with hemoglobin electrophoresis in family of transfusion dependent thalassemia’s patient.

Materials and Methods: This was cross sectional study by obtaining routine hematology and hemoglobin electrophoresis from thalassemia major patient’s family screening. The data then analyzed with Kappa and chi square to get the compatibility and significance between variables.

Results and Discussion: From 99 subjects, most of them are women aged 18-55 years. Beta thalassemia trait based on Mentzer, England and Fraser, Srivastava, and Shine and Lal was in 46.5%, 55.6%, 55.6%, and 54.5% respectively. Limitations of the research are retrospective, short study time, small number of samples and non-specific non-ADB groups. Further research is needed a specific diagnosis and more number samples.

Conclusion: Matos and Carvalho index has high sensitivity which can be used as a test for screening. The MCI < 23.85 recommended to examined the iron profile.

Keywords: Index eritrosit, anemia defisiensi besi.
Laboratory of the Dr. Soetomo Hospital. Two types of CBC samples were taken from the same 20 patients with random sex. A total of 20 samples were collected in BD Vacutainer EDTA tubes and 20 samples in Vacudraw EDTA tubes. Then, two types of coagulation study samples (PPT and APTT) were taken from the same 20 patients. A total of 20 samples were collected in BD Vacutainer Citrate tubes and 20 samples in Vacudraw Citrate tubes. CBC was done using Sysmex XN-1000 and coagulation study was done using Sysmex CS-2100i.

**Results:** There were no significant differences (p>0.05) in all CBC variables between Vacudraw and BD Vacutainer groups except MCHC. There were significant differences (p<0.05) in Vacudraw and BD Vacutainer group PPT values, but the result was still in the normal reference range. There were no significant differences (p>0.05) in Vacudraw and BD Vacutainer APTT values.

**Conclusion:** There was a good match between Vacudraw and BD Vacutainer for CBC and coagulation study. It showed that Vacudraw could be used for CBC and coagulation study in laboratory practices.

**Key words:** Vacudraw, BD Vacutainer, EDTA, Sitrat, Complete Blood Count, Coagulation Study.

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**Diagnostic study of soluble transferrin receptor to evaluate iron deficiency in chronic hemodialysis patients**

Lismawati1, Yusra2, Aida Lydia3

1. Clinical Pathology Specialist Study Program, Faculty of Medicine University of Indonesia
2. Clinical Pathology Department, Faculty of Medicine University of Indonesia, Cipto Mangunkusumo National Central General Hospital
3. Internal Medicine Department, Faculty of Medicine University of Indonesia, Cipto Mangunkusumo National Central General Hospital

**Background:** Anemia is a common complication among chronic kidney disease (CKD) patients on hemodialysis. Diminished erythropoietin (EPO) production is a main cause besides iron deficiency. Assessing iron status is crucial because iron deficiency is the reason of unresponsiveness to EPO therapy. Transferin saturation (TSAT) was a conventional marker that still widely used, but influenced by inflammation that commonly present in CKD patients. Soluble transferrin receptor (sTfR) is a potential biomarker that’s not influenced by inflammation. The objective of this study was to evaluate diagnostic performance of sTfR in evaluating iron deficiency with TSAT as a reference standard on hemodialysis patients.

**Methods:** In this cross sectional study, 127 hemodialysis patients at Cipto Mangunkusumo Hospital on August 2018 were enrolled. Complete blood count and iron status were carried out for each subject. TSAT were determined on Architect ci8200 analyzer and sTfR were measured by particle enhanced immunoturbidimetric assay on Roche Cobas c311. Diagnostic tests were analyzed using Chi square and Receiver operating characteristic (ROC) curve.

**Results:** According to sTfR ≥ 2.5 mg/L, the sensitivity was 83.3% and the specificity was 48.2%. Analysis of ROC revealed that area under the curve was 74.9%. New cut off sTfR value ≥ 2.71 mg/L was found being the best with sensitivity 83.3 %, specificity 56.5 %, positive predictive value 48.6%, negative predictive value 87.3%, positive likelihood ratio 1.91 and negative likelihood ratio 0.30.

**Conclusion:** Cutoff value sTfR ≥ 2.71 mg/L was the best value to see iron deficiency on hemodialysis patients with sensitivity 83.3% and specificity 56.5%.

**Key words:** TSAT, sTfR, hemodialysis, inflammation, iron

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**The effect of using pneumatic tube transport on PPT, APTT and factor VIII**

Ucy Nadji Maryati1, Hartono Kahar2, Yulia Nadira Indrasari2

1. Clinical Pathology Specialization Programme, Department of Clinical Pathology Faculty of Medicine-Airlangga University-Dr Soetomo Hospital, Surabaya Indonesia
2. Department of Clinical Pathology Faculty of Medicine-Airlangga University-Dr Soetomo Hospital, Surabaya Indonesia

**Introduction:** Pneumatic Tube System (PTS) is used to reduce laboratory Turnaround Times (TAT) services. Changes in air pressure, movement or vibration of blood cells in the specimen tube, as well as sudden acceleration and deceleration of the PTS has the potential to influence the results of coagulation function tests including PPT, APTT and factor VIII. Regarding the improvement of service quality, researchers wanted to compare the results of PPT, APTT and factor VIII examinations sent via PTS and non-PTS (Courier).

**Methods:** Venous blood was taken as much as 2.7 ml each, in 2 citrate tubes. 1 sample was sent using PTS, the other sample was sent using non-PTS (Courier). The distance each sample was 750 meters. All samples were analyzed for PPT, APTT and Factor VIII levels using Sysmex CS-2100i.

**Result:** PPT results using PTS were shorter compared with non-PTS (10.91 ± 3.04 seconds vs. 10.43 ± 0.58 seconds, p = 0.948). It was the same with the APTT results (27.76 ± 3.81 seconds vs. 28.17 ± 1.29 seconds, p = 0.668). The results of F.VIII gave different results, samples using PTS were longer than non-PTS (111.96 ± 0.36% vs. 108.37 ± 0.31%, p = 0.871). These results indicated that there were no significant differences in results between PPT, APTT and F.VIII in sending samples using PTS and non-PTS.

**Conclusion:** The use of PTS in sending samples of coagulation function tests did not affect the results of PPT, APTT and F.VIII.

**Key words:** PPT, APTT, F.VIII, Pneumatic Tube System

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**Spontaneous epidural hemorrhage as a complication of childhood chronic myeloid leukemia**

Andrew1, Diana Aulia2

1. Resident of Clinical Pathology Department, Faculty of Medicine University of Indonesia/Rumah Sakit Umum Pusat Nasional Dr. Cipto Mangunkusumo, Jakarta, Indonesia
2. Clinical Pathology Department, Faculty of Medicine University of Indonesia/Rumah Sakit Umum Pusat Nasional Dr. Cipto Mangunkusumo, Jakarta, Indonesia

**Introduction:** Chronic myelocytic leukemia (CML) is relatively rare in children. Clinical symptoms of CML in children and adolescents tend to be more aggressive than in adults. Bleeding manifestations are often found in CML patients.

**Case report:** We present a case of a 11-years-old female with complaints of headaches since 1 week before admission. At the initial examination, there was an enlarged spleen, an increase in the number of leukocytes with left shift, an increase in platelet count, and a normal hemostatic screening test. On the second day, there was altered mental status of patient and sign of epidural bleeding. Immediate surgery was performed to evacuate bleeding. The diagnosis of chronic myelocytic leukemia is based on the presence of thrombocytosis, hyperleukocytosis with predominance of neutrophil segments and myelocytes in peripheral blood, immunophenotyping examination results, and BCR-ABL1 fusion

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Bone marrow metastasis of solid tumor: A retrospective study in dr. Sardjito General Hospital Yogyakarta

Ambarasari Kusuma Ningtyas1, Tri Ratnaningih2
1PPDS I of Clinical Pathology and Laboratory Medicine FKKMK-UGM/ Dr. Sardjito General Hospital Yogyakarta
2Department of Clinical Pathology and Laboratory Medicine FKKMK-UGM/Dr. Sardjito General Hospital Yogyakarta

Background: Bone marrow is one of the most common sites to be involved by tumors that metastasize via the bloodstream. The metastasis of bone marrow by solid tumors is a sign of advanced stage of disease and poor prognosis. The aim of this study was to assess the pattern of bone marrow involvement of different solid tumors and their hematological profiles.

Methods: The observational retrospective study was carried out at Department of Clinical Pathology and Laboratory Medicine UGM/Clinical Laboratory Installation Dr. Sardjito General Hospital Yogyakarta. We evaluated the result of 92 bone marrow punctures and hematological profile of the patients from 92 cases of solid tumors previously diagnosed on the basis of their clinical and histopathological findings over a period of July 2015-July 2018.

Results: Out of 92 cases of solid tumors 29 (31.52%) have metastasized to bone marrow. The highest number of bone marrow involvement was seen in both neuroblastoma 29 (30.53%) and retinoblastoma 29 (30.53%), followed by lymphoma 19 (20.00%). Anemia was found as the commonest (47.62%) hematological finding followed by bisitempenia in 25.40% cases.

Conclusion: Bone marrow examination is a procedure that can be used for stage assessment and monitoring of solid tumor prognosis. Hematological profile in line with the findings of clinical severity in solid tumors.

Keywords: solid tumor, bone marrow, metastasis, puncture
Conclusion: From history, physical examination, and workup can be concluded that the patient had multsystem LCH that infiltrates the marrow, spleen, lung, and bone with complication anaemia, recurrent infection, cardiac dysfunction, and pleural effusion.

Keywords: Langerhans Cell Histiocytosis, LCH, malignancy

Correlation between hemoglobin levels, leukocyte and thrombocyte counts on complete remission opportunities in children with acute myeloblastic leukemia patients for the period of 2015 - 2017 in saiful anwar general hospital malang

Christina Amalia¹, Dian S H²
¹ Clinical Pathology Resident, Medical Faculty of Brawijaya University Malang
² The Division of Clinical Pathology, Medical Faculty of Brawijaya University, Malang / Saiful Anwar General Hospital, Malang

Background: Acute Myeloblastic Leukemia (AML) is a disease characterized by neoplastic transformation and differentiation disorder of progenitor cells from the myeloid series. 85% of cases occured on adults, 15% in children. Success in providing chemotherapy and supportive care can increase remission rates from 60 to 70%. Identification of parameters that influence the occurrence of complete remission is needed. The purpose of this study was to determine the relationship between hemoglobin levels, numbers of leukocyte and platelets with complete remission opportunities in children with AML.

Methods: Retrospective analytical study using data from patients medical records in 2015-2017 in Saiful Anwar General Hospital, Malang.

Results: Of the total 45 patients included, 20 AML patients experienced complete remission, 25 patients who had not experienced remission. The results showed that there was a strong positive correlation between thrombocyte counts and complete remission opportunities (r = 0.697, p < 0.05). And there is a moderate positive correlation between hemoglobin levels with complete remission opportunities in AML patients (r = 0.412, p < 0.05).

Conclusions and Suggestions: There is a significant correlation between hemoglobin levels, thrombocyte counts with the remission chance of AML patients. Further studies are needed regarding prognostic factors of complete AML remission.

Keywords: AML, complete remission.

Detection of HBH inclusion bodies in patient families of transfusion dependent thalassemia Using brilliant cresyl blue staining

Yuhpita Indah Efriyani¹, Leni Lismayanti², Coriejati Rita²
¹ PPDS Clinical Pathology, Faculty of Medicine, Padjadjaran University;
² Department of Clinical Pathology, Faculty of Medicine, Padjadjaran University.

besturena@gmail.com

Background: Thalassemia α especially HbH disease often has manifestation similar to thalassemia β major. In various countries such as England, Netherlands and Portugal there is a thalassemia α in the family of thalassemia β due to genetic mutations. Diagnosis thalassemia α generally uses HB electrophoresis, but not all health services have these facilities. Brilliant Cresyl Blue Staining (BCB) can detect HBH inclusions thalassemia α quickly and cheaply. The purpose of this study was to detect HBH inclusion bodies with BCB staining in patients families of transfusion dependent thalassemia.

Methods: A descriptive study was conducted prospectively on the nuclear family of patients with transfusion dependent thalassemia with anaemia based on WHO criteria. HBH inclusions that will be detected in BCB peripheral smear staining in the form of basketball appearance.

Results and Discussion: There were 82 subjects who met the inclusion criteria of a total of 144 families of patients with thalassemia transfusion dependent. The majority of subjects were 18 years old with 42 people (51.22%) and the majority of female subjects were 46 people (56.09%). Mean Hb 10.87g / dL, mean MCV 63.55fL, mean MCH 20.01pg, mean MCHC 31.44. No inclusions HBH were found with BCB staining. Screening of thalassemia α using BCB staining should be done in anemic population with MCV <80fL with more samples and using Hb electrophoresis.

Conclusions: In this study there were no HBH inclusions in families patients of transfusion dependents thalassemia.
Keywords: Brillan, Cresyl Blue, HbH inclusion, transfusion dependent thalassemia.

Influence of storage time k2edta blood sample to hemoglobin levels, erithrocyte, leucocyte, and thrombocyte in various temperature exposure using maccura dh 520 and sysmex xn-1000

Novie Rahmawati1, Leni Lismayanti2, Tiene Rostini2
1 Resident of Clinical Pathology, Medical Faculty of Padjadjaran University.
2 Staff of Clinical Pathology Department, Medical Faculty of Padjadjaran University, Dr. Hasan Sadikin General Hospital, Bandung.

Introduction: Hematologic results were influenced by storage time and temperature, and type of hematologic analyzer. Aim of this study was to determine the effect of storage time with changes of outcome at various temperatures using Maccura DH 520 and Sysmex AXN-1000.

Method: The descriptive analytical with prospectiv consecutively study used two ml of K2EDTA blood in 9 microtube divided into three groups of storage time; 3, 6, and 24 hours in air-conditioned room (22.3-22.8 °C), non-AC room (24.8-25.2 °C), and refrigerator (4.0-6.3 °C) and examined using Maccura DH 520 and Sysmex AXN-1000.

Result: Storage time at various temperatures did not significantly influence hemoglobin and erythrocyte outcomes in both devices (p > 0.05). Storage time at various temperatures had no significant effect on the leukocytes and platelets counts using Sysmex AXN-1000 (p > 0.05). Storage times of 3, 6 and 24 hours at various temperatures significantly affected leukocyte counts (p < 0.05) and platelets at 24 hours storage (p < 0.05) from Maccura DH 520. Two hematologic analyzer showed insignificant increase for hemoglobin, erythrocytes and leukocytes at 6 hours of storage time and leukocytes counts at 24 hours of storage.

Conclusion: Changes in hematological results on the Sysmex AXN-1000 were not affected by storage time at various temperatures for 24 hours. Instead platelet changes were stable after 6 hours, and leukocytes were stable after 3 hours at various storage temperatures in Maccura DH 520.

Keywords: Hematologi result, Maccura DH 520, Storage time Sysmex AXN-1000

Comparative study of fibrinogen using mechanical and optical coagulometer

Novianti Santoso1, Fify Henrika2
1 Clinical Pathology Residency Program, Faculty of Medicine, University of Indonesia, Cipto Mangunkusumo National Central General Hospital, Jakarta.
2 Clinical Pathology Department, Faculty of Medicine, University of Indonesia, Cipto Mangunkusumo National Central General Hospital, Jakarta.

Introduction: Fibrinogen test is one of the screening test used to diagnose hemostatic abnormalities. This study aims to compare the HIL and non-HIL fibrinogen sample using STA R Max mechanical method and CS-2100i optical method.

Methods: The study design utilized descriptive cross-sectional analysis. This study draws on 40 non-HIL and 30 HIL samples which were analysed using STA R Max and CS-2100i. Normal and abnormal control plasma were used for precision test while pooled citrate plasma were used for carryover test.

Results: Precision test using STA R Max and CS-2100i shows within run CV range 1.53%-2.62% and between day 2.55%-4.97%. The comparative study reveals correlation with rnon-HIL = 0.995 and rHIL = 0.951 with Bland Altman limits of agreement of 97.5% for both sample. Carryover test is 0.69% using CS-2100i and 0.12% using STA R Max. The Passing Bablok linear regression:

\[ \text{STA R Max}_{\text{non-HIL}} = 27.42 + (0.98 \times \text{CS-2100i}) \]
\[ \text{STA R Max}_{\text{HIL}} = 5.06 + (1.06 \times \text{CS-2100i}) \]

Discussion: Both coagulometer have good precision and strong correlation with high limit of agreement on non-HIL and HIL sample. The Passing Bablok regression shows no significant linearity deviation yet there is systematic difference in non-HIL sample, though not significant clinically below the total error allowable CLIA. Carryover test reveals no contamination from the previous sample.

Conclusion and Suggestion: STA R Max and CS 2100i shows strong correlation and good agreement on both non-HIL and HIL sample. Further studies for the reference value on mechanic method and HIL sample with different HIL index is recommended.

Keywords: Comparative study, Bland Altman, coagulometer, mechanic, optic

Analysis red blood cell distribution width Coefficient of variation in acute appendicitis

Dewi Suharti 1, Agus Alim Abdullah1, Mutmainnah2
1 Medical Doctor Specialist Education Program of Clinical Pathology, Faculty of Medicine, Hasanuddin University/Dr. Wahidin Sudirohusodo Hospital, Makassar
2 Department of Clinical Pathology, Faculty of Medicine, Hasanuddin University/ Labuang Baji Hospital Makassar

Background: Acute appendicitis is an acute abdominal condition that mostly requires emergency surgery. How to diagnosis acute appendicitis is still argued and becomes a challenge. This study aims to analyze the value of red blood cell distribution width coefficient of variation (RDW CV) in acute appendicitis.

Methods: This was a retrospective study. Patients with diagnosis of acute appendicitis who undergone RDW CV test were obtained. Data were divided into two groups: acute appendicitis with complications and with no complications. Data medical check-up patients who were declared healthy were taken as controls. Statistical tests were performed to analyze the value of RDW CV in the group.

Results: A total of 51 patients that meet the criteria were analyzed in this study. 36 patients with complications and 15 patients with no complications. RDW CV values in the group with complications were higher than those no complications and controls group. Statistical analysis of patients with complications vs no complications and the control group gave significant results (p < 0.001). Statistical results did not differ significantly in the group no complications vs controls (p = 0.205).

Conclusion: There was a significant difference in RDW CV values between the groups of acute appendicitis with complications vs no complications and controls groups. This concluded that the RDW CV value can be used to predict/strengthen the suspected occurrence of complications in acute appendicitis so that management can be

Discussion: Both coagulometer have good precision and strong correlation with high limit of agreement on non-HIL and HIL sample. The Passing Bablok regression shows no significant linearity deviation yet there is systematic difference in non-HIL sample, though not significant clinically below the total error allowable CLIA. Carryover test reveals no contamination from the previous sample.

Conclusion and Suggestion: STA R Max and CS 2100i shows strong correlation and good agreement on both non-HIL and HIL sample. Further studies for the reference value on mechanic method and HIL sample with different HIL index is recommended.

Keywords: Comparative study, Bland Altman, coagulometer, mechanic, optic
more precise and directed.
Keywords: Acute appendicitis with complications, acute appendicitis with no complications, RDW CV.

**Difference of reticulocyte hemoglobin equivalent (ret-he) pre and post ultrafiltration hemodialysis In patients with chronic kidney disease**

Ni Made Rindra Hermawathi1, Arifoel Hajat2
1Clinical Pathology Specialization Program, Department of Clinical Pathology, Faculty of Medicine, Airlangga University-Dr. Soetomo Hospital, Surabaya, Indonesia
2Department of Clinical Pathology, Faculty of Medicine, Airlangga University-Dr Soetomo Hospital, Surabaya, Indonesia

**Background** Chronic Kidney Disease (CKD) is a condition characterized by kidney damage and decrease of Glomerular Filtration Rate less than 60 ml/s/min/1.73 m² in more than 3 months. Anemia is the most common complication in patients with CKD who regularly undergo hemodialysis. Reticulocyte Hemoglobin Equivalent (Ret-He) is a new parameter that can reflect the storage of iron for erythropoiesis. This study compared Ret-He level pre and post hemodialysis and evaluated the effect of hemodialysis ultrafiltration(UF) to Ret-He level in CKD patients.

**Method** This was an observational analytical study. Samples were 50 patients with CKD who underwent hemodialysis regularly in the Dr. Soetomo Hospital Surabaya by consecutive sampling from August-September 2017.

**Result** The measurement of Ret-He level pre ultrafiltration hemodialysis was divided into UF< 2L and UF ≥ 2L. Both groups showed homogenous results. The group with UF < 2L increased significantly from pre to post ultrafiltration (p=0.010). The group with UF ≥ 2L was not increased significantly from 30.57 ± 3.62 to 32.69 ± 3.45 (p=0.413). Ret-He level in the group with UF < 2L was 0.81 ± 1.10, significantly higher than the group with UF ≥ 2L 0.12 ± 0.83 (p = 0.017).

**Conclusion** The difference of Ret-He level pre and post ultrafiltration was significant in UF<2L. There was a significant increase of Ret-He level in hemodialysis with UF < 2L compared to UF ≥ 2L. The measurement of Ret-He should be performed before hemodialysis due to an increase in Ret-He after ultrafiltration hemodialysis.

**Key words:** Ret-He, Ultrafiltration, Chronic Kidney Disease

**Short stature in children with beta thalassemia**

Nathalya Dwi Kartika Sari1, Betty A Tambahun 2
1Clinical Pathology Specialization Program, Department of Clinical Pathology., Faculty of Medicine, Airlangga University - Dr. Soetomo Hospital, Surabaya, Indonesia
2Department of Clinical Pathology Faculty of Medicine, Airlangga University - Dr. Soetomo Hospital, Surabaya, Indonesia

**Background:** Short stature is a growing disorder in a child and is a terminology for height that is below the 3rd percentile or -2 SD (z) score on the growth curve. A previous study mentioned that 36% of patients aged 16 years suffered from thalassemia with short stature (31.1% males and 30.5% females).

**Case:** A 2-year 3 month-old girl presented as thalassemia with routine blood transfusion 1 time / month. On physical examination the conjunctiva and mucosa of the mouth were pale, liver palpable, enlarged spleen (Schuffner 2). The anthropometric examination showed height 77 cm meaning severity stature (below -3SD). Laboratory examination showed Hb 3.7 g / dl, blood smear normochromic anemia anisopikilositosis, Hb electrophoresis showed beta thalassemia, increased serum ferritin (≥1000 ng / L) and increased liver function.

**Result:** Short stature is caused by multifactorial disturbances, the exact pathogenesis cannot be explained yet. Chronic anemia, hypoxia, iron accumulation, chronic liver disease, nutritional deficiency, dysfunction of GHRH-GH-IGF-1 axis are causes of short stature. Excess iron in IGF-1 (somatomedin) causes production disruption affecting cartilage bone growth.

**Conclusion:** Short stature is a severe complication of thalassemia major. Complete examination, proper management and administration of hormone therapy can prevent short stature.

**Key words:** Short stature, Beta thalassemia, growth hormone.

**Beta thalassemia intermedia Hb sickle with transfusion**

Christie Nur Andani,1 Adi Kesoema Aman,2 Bidasari Lubis
1Department of Clinical Pathology, Medical Faculty, Sumatera Utara University, Medan
2Department of Pediatrics, Medical Faculty, Sumatera Utara University, Medan

**Background:** The prevalence of HbS is commonly found in Mediterranean, African Sahara, Middle East and Indian regions. HbS - B Thalassemia has not been widely reported and until now, there is no definitive statistical data to describe the prevalence of the disease in Indonesia. The β thalassemia with HbS case has been found in one family from Jakarta in 1974 by Iskandar Wahidijat, A.H Markum and S. Moeslichan. Dr. Lie Injo Luan Eng in 1957 has shown that perhaps transporting african soldiers in 19th century was the cause of sporadic gene sickling operation in Indonesia.

**Case Description:** We found in one patient in Sibolga North Sumatra who had one hemoglobin sickle with beta thalassemia, male, 17 years old with HbS beta thalassemia (HbA = 25.9%, HbF = 22.4%, HbS = 48.2 %, HbA2 = 3.5%). Hemoglobin analysis examination using Electrophoresis Microcapillary from sea. On cytogentic examination, beta thalassemia was obtained with Hbs multiple heterozygous mutations (Codon 6, GAG Glutamate> GTG Valin) and IVS1-n5 (G> C).

**Conclusions:** The possibility of a population between nations followed by a marriage . the invention of double heterozygous Hbs mutation and beta thalassemia, need to be researched about the patient’s family.

**Keywords:** Hb Sickle, Beta Thalassemia

**Coagulopathy manifestation in malignancy: Deep vein thrombosis in Ovarian clear cell carcinoma with liver metastasis**

Faharni Imanina Putri Nurtyas,1 Astuti Giantini2
1Clinical Pathology Residency Program, Faculty of Medicine, University of Indonesia, Cipto Mangukusumo National Central General Hospital, Jakarta.
2Clinical Pathology Department, Faculty of Medicine, University of Indonesia.
Background: Deep vein thrombosis (DVT) is a common complication found in malignancy patients. If not handled properly, this condition can be fatal. As many as 1-8% of cases developed into pulmonary embolism and cause death. Malignancy associated thrombosis is second leading cause of death in patients with malignancy. Ovarian clear cell carcinoma has the highest risk of thrombosis compared to other carcinomas, 5-16% of patients with ovarian malignancy. This condition is aggravated by liver metastasis.

Case Description: 36-year-old woman with left ovarian clear cell carcinoma stage IVB, get a set of Carboplatin and Paclitaxel chemotherapy, complained severe pain in the left leg that progressively increase with edema and erythema from the thigh to the calf. Patient was diagnosed as suspected DVT with Wells’ scores 5 that supported by an increase in D-dimer and bilateral lower extremity venous doppler ultrasound showing DVT in the communal femoral, superficial femoral, and popliteal veins of the left leg. Abdominal CT scan result show liver metastasis with massive ascites. The patient was treated with 2 x 40 mg furosemide, 5000 units of heparin bolus followed by 20000 units of heparin drip / 24 hours and 1 x 2 mg bridging Simicar. PT and APTT result show prolongation more than target therapy.

Conclusion: We reported a case of DVT in left ovarian clear cell carcinoma stage IVB with liver metastasis. This case emphasizes coagulopathy manifestation in malignancy that can be caused by cancer management and the use of anticoagulants that are aggravated by liver metastasis.

Keywords: coagulopathy, ovarian cancer, liver metastasis.

Correlation between the number of plasma cell with monoclonal protein level in multiple myeloma patients

Mulat Muliasih1, Umi Solekhah Intansari2
1PPDS I of Clinical Pathology and Laboratory MedicineFKMK-UGM/ Dr. Sardjito General Hospital Yogyakarta
2Department of Clinical Pathology and Laboratory MedicineFKMK-UGM/Dr. Sardjito General Hospital Yogyakarta

Background: In multiple myeloma, plasma cells produce monoclonal protein which causes monoclonal gammopathy in protein electrophoresis. Measurement of monoclonal protein is standard for management of multiple myeloma. This study aimed to know the correlation between the number of plasma cell with monoclonal protein in multiple myeloma.

Method: This study was conducted at RSUP Dr. Sardjito by collecting data from medical records of multiple myeloma patients who hospitalized in RSUP Dr. Sardjito in 2017. The study population consisted of the multiple myeloma patients who had bone marrow puncture and serum protein electrophoresis examination in one time. Multiple myeloma patients with other malignancies, liver disease, autoinmun disease, diabetes mellitus, and renal disease were excluded. Measurement of monoclonal protein was from percentage of monoclonal protein to total protein in regio gamma, alpha, and beta. The data analysis was done by linier regression using SPSS version 21.

Results: There was 30 subjects with 70% male patients. Average age was 59,63 years old (range 43-73). Median plasma cell was 21% (range 1%-86%). Mean (SD) of monoclonal protein level was 4,287(2,375) gr/dL. There was correlation between the number of plasma cell and monoclonal protein level (r = 0,38; p = 0,038).

Conclusion: There was significant positive moderate correlation between the number of plasma cell and monoclonal protein level in multiple myeloma.

Keyword: multiple myeloma, plasma cell, monoclonal protein

The correlation of ferritin levels with tsh and ft4 Due to repeated transfusion in thalassemia patients

Ade Delpita1, Banundari Rachmawati2
1PPDS Department of Clinical Pathology, Faculty of Medicine, Diponegoro University, Semarang
2Department of Clinical Pathology, Faculty of Medicine, Diponegoro University, Semarang

Introduction: Thalassemia patients can led to thyroid dysfunction. The prevalence and severity of thyroid dysfunction in thalassemia have not widely studied. Levels of Thyroid Stimulating Hormone (TSH) and Free T4 (FT4) describe the state of the hypothalamic-pituitary-thyroid and is used to determine the function of the thyroid. Repeated transfusion in thalassemia patients caused iron deposit and increased ferritin. Ferritin is an inflammatory marker that is found to increase in thalassemia patients. It is known pathophysiologically that ferritin deposit can affect endocrine function.

Methods: Retrospective study of observational design, a cross sectional study of 33 thalassemia patients with repeated transfusion in Kariadi Hospital Semarang during the period from September to October 2018. Normality test being performed with Saphiro-Wilk and correlation analysis with Spearman test.

Results and Discussion: No Correlation analysis between ferritin levels with TSH levels (p=0,630;r=0,087) and there is weak positive correlation between ferritin levels with FT4 levels (p=0,025;r=0,390)

Conclusion and suggestion: There is no correlation between ferritin levels and TSH levels, but there is correlation between ferritin levels and FT4 levels, but further research is needed to analyze the factors affecting thyroid dysfunction and required additional screening for other thyroid function such as free T3 (FT3).

Keywords: Thalassemia, Thyroid dysfunction, Ferritin levels, TSH levels, FT4 levels.

Acquired hemophilia-A in patients with waldenstrom's macroglobulinemia (Case Report)

Alamsyah1, Herniah Asti Wulanjani
1PPDS-1 of Clinical Pathology, Faculty of Medicine Diponegoro University, Semarang;
2Clinical Pathology Department, Faculty of Medicine Diponegoro University-RSUP Dr. Kariadi Semarang
*ppdspatkin2016@gmail.com

Background: Acquired hemophilia A (AHA) is a rare acquired bleeding disease, characterized by autoantibody against factor VIII. Bleeding usually in the skin and mucosal. AHA frequently in
the elderly, in male and female and is associated with several conditions, such as autoimmune, pregnancy, drug reactions, solid tumor and monoclonal gammopathy. Half of patients are idiopathic. AHA is diagnosed in patients without previous personal or family bleeding history in which prolonged aPTT is not corrected after mixing and accompanied by a decrease in FVIII levels. Specific FVIII inhibitor titre activity was measured by the Bethesda assay method. Specific antibody that plays a role in inhibiting FVIII activity can be seen from the immunoisotyping examination. Waldenstrom’s Macroglobulinemia (WM) is a one of disorders that can cause AHA. Case: A 56-year-old man came with a weak and pale 10 days of hospitalized. Physical examination shown anemia, gum bleeding, lien palpable in Shuffner-1. Laboratory shown bisitopenia and leukocytosis, prolonged aPTT is not corrected after mixing with decrease FVIII levels. (BMP) support Chronic Lymphocytic Leukemia/ Lymphoma/ Smoldering Myeloma. SPE M-Spike with Immunotyphing examination of IgM lamda monoclonal. History, physical examination, laboratory, BMP, SPE, and immunotyphing shown monoclonal gammophaty which cause Acquired Hemophilia A. Bethesda assay examination recommended if FVIII therapy is not responding. Lymphoplasmasitoid cells infiltration and monoclonal IgM production establishes diagnosis of WM. Conclusion: Spontaneous hemorrhage without prior history with prolonged aPTT is not corrected after mixing and followed by a decrease in FVIII levels can lead to (by the presence inhibitor factors) coagulation disorders. Keywords: Acquired Hemophilia A, diagnosis, monoclonal gammopathy, Waldenstrom macroglobulinemia

Correlation of lactic acid, neutrophyl lymphocyte ratio and monocyte lymphocyte ratio with outcomes of Coronary artery bypass surgery patient

Cynthia1, Nyoman Suci Widyastiti2

1 PPDS Department of Clinical Pathology, Faculty of Medicine, Diponegoro University/ dr.Kariadi hospital Semarang 
2 Department of Clinical Pathology, Faculty of Medicine, Diponegoro University, dr.Kariadi hospital Semarang

Introduction : Coronary artery bypass surgery (CABG) is a surgical procedure for coronary arterial disease (CAD) case which has postoperative risk there could have complication, extending ICU length of stay until mortality complication. CABG needs long perioperative time which cause decreasing of tissue oxygenation. It causes lactic acid production increasing and spark the inflammatory factor. Neutrophil/lymphocyte ratio (NLR) and monocyte/lymphocyte ratio (MLR) become an inflammatory sign which caused by failure of heart microcirculation during operative procedure

Methods : A prospective study of 42 CAD patients that have been done CABG procedure in RSUP Dr. Kariadi Semarang between December 2017 - July 2018. Lactic acid by spectrophotometer method. NLR and MLR are taken from calculation index based from absolute neutrophil, lymphocyte, and monocyte by automatic hematology analyzer. The outcome data include ICU length of stay, complication and death case taken from medical record. The data analyzes using spearman test, t-test independent and mann whitney test.

Results and Discussion: There is significant correlation between lactic acid with ICU length of stay (p=0.001), complication (p=0.01), mortality (p=0.044). There is significant correlation between NLR with ICU length of stay (p=0.003), complication (p=0.009), mortality (p=0.014). There is significant correlation between MLR with ICU length of stay (p=0.02), complication (p=0.027), mortality (p=0.017).

Conclusion: There is significant correlation between lactic acid, NLR dan MLR with the outcomes (ICU length of stay, complication and mortality) in CAD patients that have been done CABG procedure

Keywords: Coronary artery disease. Coronary bypass surgery, Lactic Acid, NLR, MLR

Correlation between marker of inflammation with haemoglobin in obesity

Emelia Wijayanti1, Dwi Retnoningrum2, Melta Hendrianintyas2

1 Resident of Clinical Pathology Faculty of Medicine Diponegoro University Semarang 2 Staff of Clinical Pathology Faculty of Medicine Diponegoro University Semarang

Introduction: Obesity is one of global epidemic health problems. Obesity has been suggested to be associated with a state of chronic low-grade inflammation, which is characterized by abnormal cytokine production, increased acute phase reactants and activation of inflammatory signaling pathways. NLR (neutrophil to lymphocyte ratio) a simple and reliable indicator of inflammation, have been reported to be associated with metabolic syndrom, insulin resistance, and obesity in more study. Ferritin is a marker of inflammation contribute in obesity, and have been reported that ferritin is a marker of inflammation rather than iron status in overweight and obese people. Relationship between anemia and obesity may be due to fat a ccumulation and chronic inflammation in adipose tissue can be decreased iron absorption.

Methods: Cross-sectional study of 50 obesity subject, based on Riskesdas criteria, on Mei - September 2018. Marker of inflammation is ferritin serum was measured by ELISA (enzyme linked immunosorbent assay), and NLR and haemoglobin was perfromed from haematology analyzer. Spearman test was perfromed for analyzing data with p <0.05 was significant

Results: No correlation between NLR and haemoglobin, r= 0.067 and p= 0.642, and significant strong positive correlation between ferritin and haemoglobin, r= 0.630 and p < 0.000.

Conclusion: There was no correlation between NLR and haemoglobin, and there was significant strong positive correlation between ferritin and haemoglobin in obesity. Future research need to observe with evaluate hepcidin, other iron status parameter and marker of inflammation.

Keywords: Obesity, NLR, ferritin, haemoglobin

Correlation between leucocyte count, neutrophyl lymphocyte ratio (nlr), c-reactive protein (crp) and Coronary artery stenosis degree On stable coronary artery disease

Edward KSL*, Purwanto AP, Imam BW

Clinical Pathology Department of Medical Faculty, Diponegoro University Semarang

*Corresponding author: Edward KSL, +6283862305904

Background: Inflammation plays an important role in stable coronary artery disease (SCAD). Leucocyte count, NLR and CRP are markers of atherogenic and inflammatory processes in the atherosclerosis
formation. The stenosis degree indicates a visual evaluation of the percentage reduction of coronary diameter compare with normal coronary.

Objective: to determine the correlation of Leucocyte count, NLR and CRP with the stenosis degree in SCAD.

Methods: Analytic descriptive with cross sectional study in 35 patients with SCAD at Kariadi Hospital. The study was conducted during March-June 2018. Leucocyte count was measured by hematology analyzer. NLR was calculated as the ratio of absolute neutrophil cell count to absolute lymphocyte cell count. CRP was measured by i-chroma reader. Statistical analysis used Spearman test. p<0.05 was significance.

Result: Means±SD leucocyte count, NLR, CRP respectively were 7,54 ± 2,03/µl; 2,10 ± 0,93 and 2,23 ± 1,68 mg/L. Correlation between leucocyte count, NLR, CRP and stenosis degree, respectively were (r= 0,189; p=0,277); (r=0,593; p=0,000); (r=-0,112, p=0,521).

Conclusion: There are no correlation between leucocyte count and CRP with stenosis degree in SCAD. There is strong positive correlation between NLR and stenosis degree in SCAD that can be used as evaluation marker for high risk patient which meet SCAD.

Keywords: leucocyte count, NLR, CRP, stenosis degree, stable coronary heart disease

Hemostasis changing in sepsis patients and their related to sofa score in RSUP H. Adam Malik Medan

Sarah Hanna¹, Adi Koesoema Aman¹, Hasanudin Hanafie²
¹Clinical Pathology Department, Sumatera Utara University, H. Adam Malik Hospital, Medan
²Anesthesiology and Intensive Care Department, umatera Utara University, H. Adam Malik Hospital, Medan

Sepsis is a major health problem and the incidence is still increasing. Generally, sepsis occurs in about 2% of all inpatients in developed countries. The immunologic response that causes sepsis is a systemic inflammatory response that causes activation of the inflammatory and coagulation pathways. If sepsis isn’t treated immediately, it can lead to organ failure then death. Organ dysfunction is expressed as an acute change from SOFA score >2 points as a consequence of infection.

This is a cohort prospective’s design study. PT, aPTT, TT, Fibrinogen, D-dimer were examined 3 times (first, second, third day); the SOFA score was examined 2 times (first, second day) and then assessed to be related to SOFA score. 24 subjects of the study were patients who matched the inclusion and exclusion criteria in RSUP H. Adam Malik Medan.

There were significant differences from PT on the first, second, third day with p = 0.03 (p <0.05); there weren’t significant differences in aPTT, TT, Fibrinogen, D-dimer on the first, second, third day. There weren’t significant correlations of PT, aPTT, TT, Fibrinogen on the first, second, third day, if each of them were linked to the first and second day of SOFA score. There is a significant correlation on the first, second, third day of D-dimer when compared to the first and second day of the SOFA score (p <0.05)

PT changes occurred significantly on the first, second, third day of sepsis. D-dimers can be used to see the risk of organ failure in septic patients.

Key Word: Sepsis, PT, APTT, TT, Fibrinogen, Ddimer, SOFA Score

Comparison of neutrophil limfosite ratio in colorectal cancer patients of metastasis and non metastasis

Salmon Sutandra¹, Agus Alim Abdullah², Mansyur Arif³
¹Medical Doctor Specialist Education Program of Clinical Pathology, Faculty of Medicine, Hasanuddin University/Dr. Wahidin Sudirohusodo Hospital, Makassar
²Department of Clinical Pathology, Faculty of Medicine, Hasanuddin University/ Labuang Baji Hospital Makassar
³Department of Clinical Pathology, Faculty of Medicine, Hasanuddin University/Dr.Wahidin Sudirohusodo Hospital, Makassar

Background: Neutrophilia is often associated with an inflammatory response to infection and tissue damage, neutrophilia is one of evidence of the cancer-related inflammation concept that promotes tumor development. The association between the number of neutrophils in the blood and the other leucocyte counts has been suggested as a prognostic factor for cancer. The neutrophil-lymphocyte ratio (NLR) was introduced as a prognostic factor for colorectal cancer.

Methods: This was a retrospective study which samples were collected from data of patients with colorectal cancer who performed routine blood tests. The data are divided into metastatic group and non-metastatic group. Statistical tests were performed to analyze the value of NLR in the two groups.

Results: Out of the 60 data of colorectal cancer patients obtained in this study, the mean NLR was 3.85 ± 2.16. Mann Whitney test was used to analyze the value of NLR in both groups and we found significant differences with p = 0.004.

Conclusion: There are significant differences in the value of NLR in patients with metastatic and non-metastatic colorectal cancer. The value of NLR in patients with metastatic colorectal cancer is higher than those with non-metastatic colorectal cancer. NLR is an inexpensive and simple marker that is useful in identifying patients with advanced colorectal cancer.

Keywords: Metastatic colorectal cancer, non-metastatic colorectal cancer, NLR

The effect of storage of complete blood count specimen on blood cell morphology

Arie Rahmunitari¹, Yetti Hernaningsih²
¹Residency of Clinical Pathology, Faculty of Medicine Universitas Airlangga-RSUD Dr Soetomo, Surabaya
²Departement of Clinical Pathology, Faculty of Medicine Universitas Airlangga-RSUD Dr Soetomo, Surabaya

Introduction: Peripheral blood smear (PBS) examination has an important role in determining the diagnosis and confirming the result of hematology automated instrument. The storage process is very influential on the morphological stability of cells. This study aims to assess changes in blood cell morphology stored at a specific time and temperature.

Method: A sample of 30 healthy blood specimens with anticoagulant dipotassium ethylenediamine tetraacetic acid (K₂EDTA) was used. Morphological assessment was carried out by 2 experts.

Statistical Analysis: This study used kappa test to validate PBS reading. A different test using paired t-test and Kolmogorov-Smirnov test with p <0.005 was stated to be significantly different.

Results and Discussion: Changes in erythrocyte morphology at room temperature storage (18-25°C) for 8-hours storage time with grading +2, crenation was found as much as 24 (80%), while at refrigerator...
temperature (2-8°C) for 8-hours storage time with grading +1, it was found as many as 13 (43.3%). Spherocytes began to be found at room temperature (18-25°C) for 8 hours with grading +1 as much as 2 (6.7%) and at refrigerator temperature (2-8°C) for 24 hours with grading +2 as much as 3 (10%). Morphological changes of leukocytes began to occur for 8 hours of storage, especially neutrophils, while at refrigerator temperature (2-8°C), it began to occur for 16 hours. Platelet changes occurred at 8 hours of storage with enlargement and degranulation, especially at room temperature (18-25°C). Specimens stored at refrigerator temperature (2-8°C) better maintain cell integrity than stored at room temperature (18-25°C). Lymphocytes and monocytes are more stable than neutrophils.

Conclusion: PBS examination must be carried out immediately to obtain significant results.

Keyword: peripheral blood smear (PBS), dipotassium ethylenediamine tetraacetic acid (K₂EDTA), complete blood count

Is it possible to use monocyte to HDL cholesterol ratio (MHR) for predicting heart failure in acute coronary syndrome?

Amanatus Solikhah¹, Teguh Triyono²
¹Resident of Clinical Pathology & Laboratory Medicine, Faculty of Medicine, Universitas Gadjah Mada, Yogyakarta
²Department of Clinical Pathology & Laboratory Medicine, Faculty of Medicine, Universitas Gadjah Mada, Yogyakarta

Background: Cardiovascular diseases are the number one cause of death globally. Acute coronary syndrome (ACS) is a state of emergency from coronary heart disease. Biomarker implicated in inflammatory response have been investigated to predict severity of acute coronary syndrome. Monocyte to HDL Cholesterol Ratio is a novel inflammation- oxidative stress based marker of coronary artery disease. The purpose of this study is to determine whether Monocyte to HDL Cholesterol Ratio (MHR) could be used as a predictor of Heart Failure of acute coronary syndrome.

Methods: This was an analytic observational retrospective study. Adult subjects with acute coronary syndrome between January-February 2017 were collected in Sardjito Hospital Yogyakarta. Basic patient characteristics, clinical parameters, laboratory results, management and clinical outcome were analyzed. Monocyte to HDL Cholesterol Ratio was calculated by dividing the monocyte count with HDL cholesterol count. Heart Failure was diagnosed based on the criteria recommended by European Society of Cardiology guidelines.

Results and Discussion: Forty subjects with acute coronary syndrome were enrolled in this study. Acute coronary syndrome patients with Heart Failure had significantly higher MHR than Non Heart Failure (p<0.001). Significantly higher MHR was also found in death Heart Failure (p=0.025). Monocyte to HDL Cholesterol Ratio ≥143 was independently associated with Heart Failure (OR 9.33, 95% CI 2.18-39.96, p<0.001).

Conclusion: Monocyte to HDL Cholesterol Ratio ≥143 was independently associated with Heart Failure with OR 9.33.

Keywords: Monocyte to HDL Cholesterol Ratio (MHR), Acute Coronary Syndrome (ACS), Heart Failure

Coagulation defects in β thalassemia major patient at Haji Adam Malik Hospital Medan

Eduward Situmorangs¹, Adi Koesoema Aman², Bidasari Lubis²
¹Clinical Pathology Department, Pediatric Department²
Medical Faculty University of Sumatera Utara, Medan-Indonesia.

Background: The prognosis of B Thalassemia Major patient is getting better in the last few decades, but there are some complications that occur in Thalassemia patient. A prolongation in prothrombin time and activated partial thromboplastin time, a decrease in coagulation factors such as C protein S protein, and antithrombin III are found in B Thalassemia Major patient.

Method: This is a cross sectional case study performed in Haji Adam Malik Hospital from April to August 2018. Patient data consist of erythrocyte index, coagulation parameters, serum iron, and ferritin taken from 20 patients before transfusion. The difference relationship between coagulation parameters had been analysed with independent Sample Test.

Result: From 20 patient, number of patient with infrequent transfusion are 4 people, and with frequent transfusion are 16 people. The laboratory evaluation showed that mean level of haemoglobin, MCV, and MCH in case group are lower than in control group (7,02 vs 13,0 g/dL; 72,6 vs 77,9 fl; 23,8 vs 25,5 pg) . The same thing in trombocyte level in a case group (279,75 10³/μL) are lower than in control group (323,10 10³/μL). The analysis shows a significant prothrombin time differences between case and control group. A prothrombin time and aPTT occurred in Thalassemia patient. A prolongation in prothrombin time and aPTT between case and control group, and also there is a significant difference in prothrombin time level between pasien with frequent and infrequent transfusion.

Keywords: Major B Thalassemic, Coagulation, Prothrombin Time, Activated Partial Thromboplastin Time.

Analysis of neutrophil-lymphocyte ratio and platelet-lymphocyte ratio on renal disorders in systemic lupus erythematosus disease

Evi Andriyani¹, Asvin Nurulita², Darwati Muhadi³
¹Medical Doctor Specialist Education Program of Clinical Pathology, Faculty of Medicine, Hasanuddin University/Dr. Wahidin Sudirohoso Hospital, Makassar
²Department of Clinical Pathology, Faculty of Medicine, Hasanuddin University/Dr. Wahidin Sudirohoso Hospital, Makassar

Background: Systemic Lupus Erythematosus (SLE) is an autoimmune disease that causes damage to several organ systems including the kidneys. The neutrophil-lymphocyte ratio (NLR) and platelet-lymphocyte ratio (PLR) continue to be developed as a marker of SLE disease activity. The aim of this study was to assess NLR and PLR for markers of kidney disorders in SLE.

Method: A retrospective study assessed NLR and PLR with routine urine results including proteinuria, hematuria and cylinders from 40 subjects of SLE patients at Dr. Wahidin Sudirohoso Hospital Makassar from July 2017 - July 2018. Descriptive statistical analysis, frequency distribution and Mann-Whitney statistical test.

Results: NLR values were significantly higher in positive hematuria than negative hematuria, which was 7.44 compared to 3.80 (p <0.05).

Conclusion: A significant relationship between increased NLR
values and hematuria can be used as a marker of early occurrence of lupus nephritis even though no manifestations or signs of other kidney disorders are found.

Keywords: Neutrophil Lymphocyte Ratio, Platelet Lymphocyte Ratio, SLE, Lupus Nephritis

Evaluation of blast percentage after week 7 of children acute lymphoblastic leukemia treatment

Rifatul Maufah1, Usi Sukorini2
1Clinical Pathology Specialist Programme, FK-KMK UGM, Yogyakarta
2Department of Clinical Pathology, FK-KMK UGM, Yogyakarta

Background: Acute leukemia in children covers 30% -40% of malignancy in children, which can occur at all ages, the largest incidence occurs at 2-5 years of age with an average incidence of 4-4.5 cases / year / 100,000 children under 15 years old. The aim of this study was to evaluate the blast percentage of bone marrow aspirate on week 7.

Methods: The study used a descriptive design, a retrospective analysis was perform on r acute lymphoblastic leukemia (ALL) patients for 6 months (January 2018 to June 2018). All patients aged ≤15 years were first diagnosed as ALL who were treated at the Dr. Sardjito.

Results: There were 22 new patients, aged 2 years - 15 years, mostly between 2-5 years old as many as 10 (45.45%) children. Leukocyte levels in this study varied from 1,300 to 491,830 x 10^9 /µl. After the seventh week the level of leukocytes ranged from 2.38 to 14.47 with an increase in the series of granulocytes in the examination of bone marrow aspiration. In the seventh week of bone marrow aspiration, remission of 18 (81.8%) children and no remission of 4 (18.2%) children was achieved.

Conclusion: Remission was observed in 18 (81.8%) children after seventh week and no remission of 4 (18.2%) children, with a significant decrease in the percentage of lymphoblasts between the first and second results of bone marrow aspiration. The blast percentage of the reduction interim bone marrow may be usefull prognostic factor to predict outcome.

Keywords: acute lymphoblastic leukemia, children, bone marrow aspirate

The correlation between the abnormalities of wdf, wnr, and ret scattergram by sysmex xn-1000 and parasitemia index of malaria patients in Merauke Hospital

Merylin Oktavia Ronoko1, Aryati1, Arifoel Hajat2
1 Laboratory Installation Staff of Merauke Hospital, Merauke, Indonesia
2 Department of Clinical Pathology, School of Medicine, Airlangga University · Dr. Soetomo Hospital, Surabaya, Indonesia

Introduction: Malaria is still a health problem in Indonesia. Microscopic examination by Giemsa stain is the gold standard to diagnose malaria. Density of parasitemia is known related to the severity or malignancy of malaria. Sysmex XN-1000 can be used as an alternative diagnostic approach to malaria. Plasmodium malaria can be detected by Sysmex XN-1000 that is noted by the appearance of abnormalities in WDF, WNR, and RET scattergram. This study aimed to determine the correlation between WDF, WNR, and RET scattergram abnormalities of Sysmex XN-1000 against parasitemia index of malaria patients in Merauke Hospital.

Method: This was a crosssectional observational study and done during November 2017-February 2018 in Merauke Hospital. The positive samples of malaria by Giemsa stain which then underwent complete blood counts were examined by Sysmex X-1000 and findings of scattergram abnormalities were analyzed.

Results: There were 65 positive samples of malaria: showed P. falciparum (35%), P. vivax (60%), P. ovale (3.1%), and P. malariae (1.5%), but Plasmodium malaria species did not correlate with the parasitemia index (p = 0.691). The abnormalities of WDF and WNR scattergram were higher than RET scattergram (80% vs 77.7%), P. vivax dominated the appearance of abnormalities in WDF and WNR scattergram, and P. falciparum dominated the appearance of abnormalities in RET scattergram (36/39, 92.3% vs 14/23, 60.9%). The positivity of an abnormal appearance in one or three scattergram was 95% with cut-off ≥ 5.016,5/µL.

Conclusion: Whether an abnormality appeared or not in at least one or three scattergrams (WDF/WNR/ RET) by Sysmex XN-1000 correlated with parasitemia index.

Keywords: Malaria, scattergram abnormality, Sysmex XN-1000, parasitemia index

Acute myeloid leukemia (AML) type M7 (megakaryoblastic leukemia) in Children

Ivan Master Worung1, Slanny Herawati2, Anak Agung Wiradewi Lestari2
1Clinical Pathology Specialist Programme, Faculty of Medicine, Udayana University/ Sanglah Hospital, Denpasar
2Department of Clinical Pathology, Faculty of Medicine, Udayana University/ Sanglah Hospital, Denpasar

Background: Acute leukemias are hematologic malignancies characterized by increased numbers of myeloid or lymphoid blasts. The overall annual incidence of these disorders in the general population is about 4 per 100,000, with approximately 70% of them being acute myeloid leukemia (AML). AML accounts for about 15% of childhood leukemias and for approximately 80% to 90% of acute leukemias in adults, with the median age at diagnosis being about 70 years.

Case Description: AP is a 2 years 4 month boy came to Sanglah hospital due to of fever. His parent said there is lump behind his right ear since 6 month ago. On the physical finding the nutrition status is malnutrition, conjungtiva anemis, and enlargement lymph nodes. From the laboratory finding there is leukopenia, neutropenia. And from the blood smear showed normokrom normositer anemia. From bone marrow aspiration (BMA) showed acute myeloid leukemia (AML) and immunophenotyping showed myeloid linage (megakaryositik). This patient had been diagnose with acute myeloid leukemia type M7 (megakaryoblastic leukemia). Which is shown the blast morphology is heterogeneous in appearance, resembling L1 or L2 cells with or without granules and having one to three nucleoli. The cytoplasm has blebs. Immunophenotype is CD 41, CD 42, CD 61 positive in addition to CD 13 and CD 33 positivity

Conclusion: AML type M7 megakaryoblastic is a rare case in children, whereas if this type happened has a poor prognostic.

Keywords: Acute myeloid leukemia type M7, megakaryoblastic leukemia.
Myelodysplastic syndrome (mds) in children with transformation to acute myeloid leukaemia with myelodysplasia-related changes (aml-mrc)

Ni Komang Ayu Parmawati1, Sianny Herawati2, Nyoman Wande3
1Clinical Pathologist Resident of Faculty Medicine, Udayana University/General Hospital Sanglah Denpasar
2Deparment of Clinical Pathology Faculty Medicine, Udayana University/ General Hospital Sanglah Denpasar

Background: The myelodysplastic syndromes (MDS) are a group of clonal haematopoietic stem cell diseases characterized by cytopenia, dysplasia in one or more of the major myeloid lineages, ineffective haematopoiesis and recurrent genetic abnormalities. Accounting for <5% of all hematologic malignancies in children. Approximately 30% of patients with MDS show progression to AML within a few months up to several years. Following is MDS case report in children who have underwent Acute Myeloid Leukaemia transformation with Myelodysplasia-Related Changes (AML-MRC).

Case Description: A 16-year-old boy came to Sanglah Hospital Emergency Department was complaining of pain and swelling in both knees and joints since last month. Fatigue and fever was happened a week before admission. Previous history of hospitalization twice with the same symptom. Physical examination revealed pale conjunctiva with laboratory result bicytopenia. Blood smear showed anemia normochromic normocytic, neutropenia and thrombocytopenia. Bone marrow aspiration morphology showed hipercellularity with blast presentation > 10% and multilineage dysplasia > 50% supporting MDS diagnosed transformation to Acute Myeloid Leukaemia with Myelodysplasia-Related Changes (AML-MRC) leukemia phenotyping showed positive results on CD 33, CD 36 and HLA-DR presenting Monocytic Lineage.

Conclusion: High degree dysplasia and blast percentage in blood and bone marrow increase tendency to transform into acute myeloid leukaemia (AML). The diagnose of MDS requires analysis of blood and bone marrow morphology and cytogentic analysis as recommendation by WHO classification.

Keywords: Myelodysplastic Syndromes, cytopenia, dysplasia, Acute Myeloid Leukaemia with Myelodysplasia-Related Changes

Diagnostic test, correlation and agreement of erythrocyte sedimentation rate measurement using caretium xc-a30 modify westergren and manual westergren method at sanglah general hospital denpasar

Made Minarti Witarini Dewi1, Sianny Herawati2, Ni Kadek Mulyantari3
1Clinical Pathologist Resident of Faculty Medicine, Udayana University/ General Hospital Sanglah Denpasar
2Departement of Clinical Pathology Faculty Medicine, Udayana University/ General Hospital Sanglah Denpasar

Background: The erythrocyte sedimentation rate (ESR) test is one of the most widely performed laboratory tests to assess acute phase of inflammation, infection, autoimmune or malignancy. The reference method for measurement ESR was introduce by Westergren. This method is generally easy, unexpensive but time consuming. Automatic instrument was made to decrease the measurement time. Caretium XC-A30 is automatic instrument to measure ESR in Sanglah General Hospital Denpasar without previous research. Aim of this study was assessing sensitivity, specificity, positive predictive value, negative predictive value, correlation, and agreement of Caretium XC-A30 compared to the reference method.

Methods: A total of 35 samples in consecutive sampling were taken during August 2018 at Sanglah General Hospital, Denpasar. The samples are examined for ESR with Caretium XC-A30 and manual Westergren. Sensitivity, specificity, positive predictive value, negative predictive value, correlation and agreement was compared between two methods.

Results: The Westergren methods was the reference method and Caretium XC-A30 was testing method. Diagnostic test was done with sensitivity, specificity, positive predictive value, negative predictive value, in sequence are 93.75%, 100%, 100% dan 95%. Wilcoxon signed rank test showed no difference between two methods (p= 0.439). Very strong correlation and excellent agreement showed with Spearman coefficient correlation r= 0.989 and kappa coefficient 0.942.

Conclusion: Caretium XC-A30 is a reliable and precise instrument for ESR measurement. This instrument showed high sensitivity and specificity and no difference with Westergren as the reference method. Very strong correlation and excellent agreement was showed. It can be potential useful tool in performing ESR measurement with high throughput and less time than manual Westergren method.

Keywords: ESR, Caretium XC-A30, Westergren

T-Acute Lymphoblastic Leukemia (ALL) pada anak dengan ko- ekspresi CD 117

Komang Juwita Endrawati1, Ni Nyoman Mahartini2, Sianny Herawati2
1Clinical Pathologist Resident of Faculty Medicine, Udayana University/ General Hospital Sanglah Denpasar
2Deparment of Clinical Pathology Faculty Medicine, Udayana University/ General Hospital Sanglah Denpasar

Background: Leukemia is a group of clonal abnormalities originating from single cells with genetic changes in bone marrow or peripheral lymphoid tissue. Leukemia is estimated at 3% of all malignant cases.1. Acute T-cell lymphoblastic leukemia is estimated to be 12-15% of cases ALL (Raetz et al, 2016). Immunotyping examination is important in the diagnosis of T-ALL, CD1a, CD2, CD 3 (membranous and cytoplasm), CD 4, CD 5, CD 7, and CD 8 as antigen markers of T cells CD 33, CD 117, CD 34 and CD 56 are myeloid-related antigens.3 The occurrence of co-expression of marker T cells with myeloid markers is very rare 4.

Objective: To report cases of T-Acute lymphoblastic leukemia in children with CD expression 117

Case report: A boy, 13 years old with a complaint of fever and bruising on the skin since 1 year ago. Physical examination obtained 150/70 mmHg BP, temperature 37.8 C, enlargement of the right and left neck and inguinal glands, enlargement of the liver and petichia in both lower extremities. Complete blood examination shows leukocytosis, anemia and thrombocytopenia. Edge blood smears suggest the presence of cigar cells, target cells and lymphoblasts-50%. Removal of bone marrow aspiration gets lymphoblasts> 30% and concludes an ALL (L2). Immunophenotyping examination found CD 3, CD 5, CD 117 positively supporting T-ALL with co-expression of CD 117. During treatment the patient experienced seizures due to spontaneous intracerebral hemorrhage which caused the patient to die.

Conclusion: Cases of 13-year-old boys suffering from T-ALL (L2) with co-expression of CD 117 have a poor prognosis.

Keywords: Acute Lymphoblastic Leukemia, CD 117, T-ALL
Change of abo blood group in a patient with acute myelocytic leukemia
Case Report
Ni Ketut Puspa Sari1, Ni Kadek Mulyantari2, Sanny Herawati3, I Putu Yuda Prabawa4
1Clinical Pathology Specialist Programme, Faculty of Medicine, Udayana University/Sanglah Hospital, Denpasar
2Department of Clinical Pathology, Faculty of Medicine, Udayana University/ Sanglah Hospital, Denpasar

Background: ABO and Rhesus blood groups are clinically important especially in blood transfusion Blood groups are determined by the antigens found on the erythrocyte membrane. In patients with hematologic malignancies, especially from the myeloid lineage, changes in blood group can occur in the ABO system mainly due to weakness or loss of some ABO antigens.

Case Description: A nine year old girl admitted to the hospital with chief complaint high fever three days prior admission. The patient had been diagnosed with acute non lymphoblastic leukemia since three months ago. From medical history, the patient had undergone chemotherapy and received 22 bags of PRC transfusion with blood group O (+) from February 27th until may 28th 2018. On july 21st 2018 the transfusion procedure was carried out again and the blood group showed B (+), the procedure was repeated using a new sample but the result remained the same. The crossmatch was performed with five blood groups O (+) and two blood group B (+) showed mayor: negative, minor:+weak, AC:+weak, mayor: negative, minor:+weak, AC:+weak respectively.

Conclusion: Changes of blood group antigens in hematologic malignancies that experience ABO antigen alternation and return to the original blood group are a reflection of the remission from the disease. The expression of H antigen in blood group A and B may revert to normal with an improvement from the underlying disease.

Keywords: ABO antigen, AML, Change of ABO Blood Group

Thrombocytopenia in pregnancy
I Made Dharma Pramana1, Ni Kadek Mulyantari2
1Resident of Clinical Pathology, Faculty of Medicine Udayana University/Sanglah Hospital
2Department of Clinical Pathology, Faculty of Medicine Udayana University/Sanglah Hospital

Preliminary: Thrombocytopenia in pregnancy is a common finding. Although related to physiological processes of pregnancy, in cases with moderate and severe thrombocytopenia many pathological processes can be the cause. Gestational Induced Thrombocytopenia is the most common cause for thrombocytopenia in pregnancy. Immune thrombocytopenic purpura (ITP) is the other cause. It is very difficult to diagnose thrombocytopenia in pregnancy because of the lack of specific tests to distinguish it. some cases will be followed by the occurrence of thrombocytopenia in babies born. This is a case of thrombocytopenia in pregnancy with a baby who has thrombocytopenia

Case: 126-year-old woman came to Sanglah General Hospital with chief complaint fever since 3 days. The patient also complains headache. History of Thrombocytopenia from 5 months of gestation. And several times hospitalised and get platelet transfusion. Physical examination obtained fever with laboratory results of leukocytosis and thrombocytopenia with prolonged prothrombin time, blood smear showed giant platelets. And the baby born with surgery, aterm, with a physical examination within normal limits with laboratory results of thrombocytopenia and a picture blood smear also showed giant platelets.

Conclusion: Immune thrombocytopenic purpura in pregnancy and gestational induced thrombocytopenia and indeed very difficult to distinguish. One that supports the diagnosis of ITP is thrombocytopenia in babies born. It needs confirmation of confirmation in the form of additional tests on genotypic HPA from mother, father and baby.

Keyword: Thrombocytopenia in pregnancy, Immune thrombocytopenic purpura, Gestational Induced Thrombocytopenia, Neonatal Alloimmune Thrombocytopenia.

Analysis of correlation between platelet to lymphocyte ratio with severity of coronary artery disease
Zahra Inayah Kasim1, Sulina Yanti Wibawa2, Darrawaty E.Rauf3
1Residency Training Program, Department of Clinical Pathology, Faculty of Medicine, Hasanuddin University/dr.Wahidin Sudirohusodo Hospital Makassar
2Department of Clinical Pathology, Faculty of Medicine, Hasanuddin University/ Stella Maris Hospital Makassar
3Department of Clinical Pathology, Faculty of Medicine, Hasanuddin University/ Faisal Islamic Hospital Makassar

Background: Atherosclerosis in CAD is marked by formation of plaque inside the arterial lumen. Platelet plays a role on formation and development of atherosclerosis. Adhesion of platelets to the endothelial cells followed by releasing platelet granules caused inflammation of endothel. Lymphocytes also play a role in atherosclerosis and atherotrombosis. T lymphocyte was the first to be recruited inside atheromas and gathered along inside an unstable plaque. The severity of stenosis can be calculated using Gensini score. The Aim of this study is to analyze the correlation between PLR and degree of stenosis in CAD.

Methods: We retrospectively collected data of 110 patients with CAD that had undergone coronary Angiography. Platelets and lymphocyte count were measured by automatic hematologycal analyzer. PLR was measured by dividing trombocyte count with absolute lymphocyte. Angiography findings were calculated using Gensini score and later devided into 3 groups according to degree of severity.

Results: 110 patients retrospectively assessed, 80% were male and 20% female. The most age found was 50-59 years (35.5%). Using Anova test there is a significant differences on PLR between 3 groups of lesions (p<0.05). Continued with Posthoc test, the only significant finding was PLR between moderate and severe lesion. By Spearman’s Correlation test, there is a positif colleration between PLR and severity of stenosis (p=0.048), with R value 0.189 (3.6%).

Conclusions: There was a poor correlation between PLR and degree of stenosis severity in CAD. A prospective study needed to assess PLR as predictor of mortality and morbidity in CAD.

Keyword: PLR (Platelet to lymphocyte ratio), atherosclerosis, CAD, Gensini score.
Hematological description of myelodysplastic syndrome patient in Dr. M. Djamil Hospital Padang

Bestri Neli Agustin1, Hanifah Maani2, Desywari2
1 Clinical Pathology Specialist Program, Faculty of Medicine, Andalas University/Dr. M. Djamil Hospital, Padang
2 Department of Clinical Pathology, Faculty of Medicine, Andalas University/Dr. M. Djamil Hospital, Padang

Introduction: Myelodysplastic syndrome (MDS) is a clonal disorder of hematopoietic stem cells with cytopenia, dysplasia, and tends to transform into acute myeloid leukemia. The diagnosis of MDS based on hematological examination, peripheral blood cell morphology, bone marrow, advanced cytogenetic and immunophenotyping, but the last two are not available in all hospital in Indonesia, so the MDS diagnosis is limited to morphology of peripheral and bone marrow blood cells.

Methods: This was a descriptive study in the central laboratory of Dr. M. Djamil Hospital Padang from November 2016 to October 2017. The population was all patients with bone marrow examination. The subject was all patient who had been diagnosed with MDS from the results of a hematological examination, peripheral blood smear, and bone marrow examination.

Results: Nineteen MDS patients in this study consisted of 52.6% male and 47.4% female with a ratio of 1:1.1; mean age was 40.6 years old. Physical examination results: anemia 66.4%, anemia+organomegaly 31.6%. Hematological examination: anemia+leukopenia+thrombocytopenia 57.8%, anemia+leukopenia 21.1%, anemia+thrombocytopenia 21.1%. Examination of peripheral blood smears: for erythrocyte, size: anisopoikilosytosis 73.6%, normocytic 26.4%; color: polychrome 57.8%, normochrome 42.2%, blast found in 42.1% of patients. Examination of bone marrow smears, cellularity: hypocellular 73.6%, hypoplastic 26.4%, normocellular 5.3%. Dysplasia of erythropoietic+granulopoietic-thrombopoietic series 47.4%; erythropoietic-granulopoietic series 31.5%; erythropoietic-granulopoietic-thrombopoietic series 15.8%; erythropoietic series alone 5.3%.

Conclusion: The hematological features of the most MDS patients in this study were anemia, anisopoikilosytosis, polychromatophilia, hypoplastic cellularity, and dysplasia of erythropoietic, granulopoietic and thrombopoietic series.

Keywords: Myelodysplastic syndrome

Interferences of nucleated red blood cells on leucocyte count and differential counting parameters in automated hematology analyzer

Agri Febria Sari1, Zelly Dia Rofinda2
1 Clinical Pathology Specialist Program, Faculty of Medicine, Andalas University/Dr. M. Djamil Hospital, Padang
2 Department of Clinical Pathology, Faculty of Medicine, Andalas University/Dr. M. Djamil Hospital, Padang

Introduction: Nucleated red blood cell (NRBC) is immature erythrocyte and usually not found in peripheral blood after neonatal period. Its presence in peripheral blood after that period indicate bone marrow damage or stress and serious disease. Its presence increases leucocyte count in automated hematological analyzer.

Case: Two days old baby with Respiratory Distress ec suspected Hyaline Membrane Disease was born premature 27-28 weeks by cesarean section by indications severe preeclampsia + fetal distress, birth weight 900 grams and birth length 37 cm. Automated hematology analyzer Sysmex XT 2000-i’s results were: hemoglobin (Hb) 9.0 g/dL, hematocrit 27%, erythrocyte 2.36 million/µL, leucocyte 10.250/mm³, platelet 18.000/mm³, and differential counting 0.2/0/-/—/—/—. It displayed small asterisk (*) and dashes (— —) signs beside certain parameters, and flags “WBC Abn Scattergram”, “Immature Gran.”, “NRBC”, “RBC Lyse Resistance?” and “Platelet Clumps!!”. These were confirmed by reviewing peripheral blood smear and obtained NRBC 1.138/100 leucocytes, so corrected leucocyte count 828/mm³ and differential counting 0/0/5/60/31/4. Interpretation was pancytopenia.

Discussion: Leukocyte count by automated hematology analyzer had significant differences with its correction based on NRBC’s presence in peripheral blood smear. Nucleated RBC can cause false increase of leucocyte count in automated hematology analyzer. Their similar size with lymphocytes will cause analyzer to misread it as leucocytes. Its presence has important clinical values and correlated with disease’s severity.

Conclusion: Peripheral blood smear confirmation is needed to judge accuracy of analyzer if it has technological limitations to read and calculate NRBC.

Keywords : NRBC, Neonate

Correlation between total lymphocyte count, haemoglobin levels, lymphocyte/leukocyte ratio (LLR), and lymphocyte/neutrophil ratio (LNR) to CD4 levels in patients with Human Immunodeficiency Virus infection at Sanglah Hospital

I Nyoman Wande*, Muhamad Robi’ul Fuadi**, Solichul Hadid**,
1 Clinical Pathology, Medical Faculty, Udayana University / Sanglah Hospital
2 Clinica Pathology, Medical Faculty, Airlangga University/Dr. Soetomo Hospital

Background: Acquired Immunodeficiency syndrome (AIDS) is caused by infection with the Human immunodeficiency virus (HIV) and is characterized by a progressive decrease in the immune system which eventually leads to the development of opportunistic infections and other complications. Besides CD4 examination, a complete blood count (CBC) is also conducted to monitor the progression of HIV AIDS.

Objectives: To determine the correlation of total lymphocyte count, hemoglobin level, lymphocyte/leukocyte ratio (LLR) and lymphocyte/neutrophil ratio (LNR) to CD4 levels in patients with HIV infection.

Methods: This study is a cross-sectional analytic conducted by retrospectively. The sample in this study was taken in the period of July 2017 to August 2017 which carried out complete blood counts (CBC) and CD4. Statistical analysis was performed by normality test with Kolmogorov-Smirnov and correlation test with Pearson Correlation using SPSS version 14. The significance level was determined by p <0.05.

Results: A total of 60 sample conducted CD4 and complete blood counts (CBC) examinations during the period July-August 2017. The mean CD4 levels were 341.73 ± 243.48 cells/µL, the total leucocyte count was 6.98 ± 2.93 x 10³/µL, the total lymphocyte count was 2.09 ± 0.87 x 10³/µL, hemoglobin level 13.38 ± 2.09 g/dL, lymphocyte/leukocyte ratio (LLR) 0.31 ± 0.11, lymphocyte/neutrophil ratio (LNR) 0.67 ± 0.40. Statistical analysis showed that data is normally distributed. Pearson correlation analysis showed that there was a significant relationship between CD4 levels with total lymphocytes counts, hemoglobin levels, RLL, RLN with correlation coefficients
ABSTRACT

Introduction: There is a positive correlation between CD4 levels and total lymphocytes, hemoglobin levels, RLL and RLN in patients with HIV at Sanglah Hospital.

Keywords: CD4 levels, HIV infection, complete blood counts.

IMUNOSEROLOGY

Study of P24 antigen using rapid method in patients with high risk of HIV infection and with newly diagnosed HIV

Amelia Pratiwi1, Agnes Rengga Indrati2, Coriejati Rita2
1Clinical Pathologist Resident of Faculty Medicine, Padjajaran University, Bandung
2Deparment of Clinical Pathology Faculty Medicine, Padjajaran University, Dr. Hasan Sadikin, Bandung

Background: Eradication of HIV/AIDS continues to be a major global health issue including in Indonesia. The combination of p24 antigen in rapid test is expected to detect HIV patients earlier. Aim of this study was to assess the examination of p24 antigen using the rapid method in patients at high risk of HIV and with newly diagnosed HIV.

Methods: Subjects in this observational research with cross-sectional approaches were divided into group I, consisted of subjects who would be screened for HIV and were known to have risk behaviour and group II, consisted of subjects who had just been diagnosed with HIV by antibody testing and had been examined for viral load.

Results: Group I consisted of 45 subjects with 53% were men and heterosexual intercourse as the most common risk factor. Fourteen subjects from group I were diagnosed HIV positive. Group II consisted of 45 HIV positive subjects with 31(69%) subjects having detectable viral load and 14(31%) others undetectable. Examination of p24 antigen both in group I and group II all showed negative results.

Conclusion: The negative result of p24 antigen in all subjects with a high risk of HIV infection and positive HIV patient with detected viral load was possibly cause by either bound of the antigen by the specific antibody or the examination was performed too early before antigen p24 can be detected (<14 days). Examination of p24 antigen is not recommended for individuals who already had antibodies to HIV.

Keywords: antigen p24, HIV/AIDS, rapid combo HIV

Comparison of prostate specific antigen density with benign and malignant histopathology prostate cancer patients in dr. Hasan Sadikin General Hospital Bandung

Heti Kus Erni1, Anna Tjandrawati1, Delita Prihatni2
1Resident of Clinical Pathology, Medical Faculty of Padjadjaran University;
2Clinical Pathology Department Medical Faculty of Padjadjaran University, Dr.Hasan Sadikin General Hospital Bandung.

Introduction: Prostate specific antigen (PSA) is a parameter that is sensitive to the prostate gland but is not specific to a particular disease. To increase PSA sensitivity as a predictor of prostate cancer, Prostate Specific Antigen Density (PSAD) was examined in this study. Prostate Specific Antigen Density is the ratio between PSA values compared to prostate volume based on the results of Transrectal Ultrasonography. This study aims to determine the comparison between PSAD and histopathology in patients with prostate cancer.

Methods: The study design is analytical descriptive retrospective. Secondary data collection is obtained from the medical records of prostate cancer patients who were treated at Dr. Hasan Sadikin General Hospital Bandung during the period of January to December 2017. The sample size uses a correlation formula with a total minimum sample of 67 subjects. The research data was analyzed by data normality test using Kolmogorov-Smirnov test with numerical data. To determine the correlation between PSA density and histopathology results, the Mann-Whitney test with p <0.05 was taken as a significance limit.

Results: The number of study subjects was 69 subjects. The biopsy results in 69 subjects consisted of 15 subjects with benign histopathology and 54 subjects with malignant histopathology. There was a significant correlation between PSAD with malignant prostate histopathology with p <0.001 and a mean of 2.3 ng/ml/cc. Conclusion Prostate Specific Antigen Density correlated with the...
histopathology result of prostate cancer and is a sensitive test in the diagnosis of prostate cancer before the results of prostate biopsy.

Keywords: Prostate biopsy, Prostate cancer, PSA density

Ten most commonly disease
With positive crossmatch and negative autocontrol

Raissa Yolanda¹, Nadjwa Zamalek Dalimoentthe ², Dewi Kartika Turbawaty²
¹Clinical Pathologist Resident of Faculty Medicine, Padjajaran University, Bandung
²Deparment of Clinical Pathology Faculty Medicine, Padjajaran University, Dr. Hasan Sadikin, Bandung

Introduction: Crossmatch is a pretransfusion test, part of the compatibility test. The purpose of crossmatch is to determine the blood suitability between donor and patients. There are two stages of crossmatch, major and minor. Crossmatch is always done together with autocontrol test. Crossmatch is called positive if you get a positive result in a major or minor crossmatch, also by looking at the autocontrol results, because in various circumstances, positive crossmatch can be found with positive or negative autocontrol results. The purpose of this study was to determine the most common diseases that cause positive crossmatch in patients with negative autocontrol.

Method: This retrospective research was conducted using crossmatch data at RSHS Blood Bank in 2017.

Result: There were 552 positive crossmatch from 41189 total crossmatch (1.34%) at RSHS Blood Bank in 2017. From 552 positive crossmatch there were 354 positive crossmatch with positive autocontrol (64.13%) and 198 positive crossmatch with negative autocontrol (35.87%). Ten most commonly diseases that caused positive crossmatch with negative autocontrol were: malignancy (solid) 52 cases (26.26%), hematopoietic malignancy 16 cases (8.08%), chronic renal failure 12 cases (6.06%), sepsis 11 cases (5.66%), thalassemia 10 cases (5.05%), trauma 10 cases (5.05%), gastrointestinal bleeding 10 cases (5.05%), aplastic anemia 8 cases (4.04%), congenital abnormalities 7 cases (3.54%), respiratory failure 4 cases (2.02%).

Conclusion: The most common diseases that cause positive crossmatch with negative autocontrol is malignancy (solid). The descriptive of the disease can be a preventive step to prevent transfusion reactions.

Keywords: negative autocontrol, positive crossmatch

Prevalence of seroconversion of HBsAg and anti HCV among dialysis patients in tertiary hospital bandung: two years observation

Rizki Andriyani¹, Anna Tjandrawati², Adhi Kristianto Sugianil²
¹Clinical Pathologist Resident of Faculty Medicine, Padjajaran University, Bandung
²Deparment of Clinical Pathology Faculty Medicine, Padjajaran University, Dr. Hasan Sadikin, Bandung

Introduction: Chronic kidney disease is a global health problem. Factor that influence the mortality and morbidity in dialysis patient is infection whereas Hepatitis B and C are the most common causes. Hepatitis B and C is a blood related infection, patients with chronic kidney disease have higher risk of infection due to Hepatitis B and C. The aim of this study is to observe the prevalence of seroconversion of HBsAg and anti HCV among dialysis population.

Methods: This study was conducted between December 2015-December 2017, using retrospective data of haemodialysis population. The inclusion criteria was the haemodialysis patients with serial examination of HBsAg and anti HCV within six months. Result of this study was presented in frequency and percentage.

Results: A total of 119 patients was included in this study. There were 60 female (50.4%) and 59 male (49.6) with were age group 51-60 years (27%), 41-50 years (25.2%) and 61-70 years (24.4%). No seroconversion of HBsAg were found among dialysis population, while there was 9.5% anti HCV seroconversion within the same population.

Conclusion: There was no HBsAg seroconversion in hemodialysis patients at Hasan Sadikin Hospital, Bandung. Anti HCV seroconversion was 9.5%. Further testing is needed with HCV RNA in patients with positive anti-HCV and the separation of dialysis machines for patients with anti-HCV reactive needs to be considered.

Keyword: Anti HCV, Dialysis, HBsAg, Seroconversion

The relationship of hepatitis B viral load and liver fibrosis risk in chronic hepatitis B patients

Amiroh Kurniati
Faculty Medicine, Diponegoro University, Semarang

Introduction: Highly cases of chronic HBV infection both in Indonesia and the world, with a progressive tendency to increase, will result in an increased risk of liver fibrosis. HBV DNA testing was carried out in meeting the criteria for determining diagnosis and monitoring therapy for chronic HBV infection. The aim of the study was to determine the relationship between HBV DNA values and the risk of fibrosis in chronic HBV infection patients.

Materials and methods: Retrospective analytical study using data from medical record data and Laboratory Information System for patients with chronic HBV infection at Moewardi Hospital in 2017. Obtained 107 patients data ents who met the inclusion and exclusion criteria, including age, gender, laboratory results: HBsAg, HBeAg, SGPT, HBV DNA and data from transient elastography (TE) or fibroscan. Subjects were divided into 2 groups based on fibrosis status, HBeAg status and viremia status. Test for normality with Kolmogorof Smirnov , comparative test for 2 groups using independent t test or alternative test (Mann Whitney test). Fibrosis risk assessment was done by Chi square test. The results were be significant if the p value <0.05.

Results: There were significant differences in the parameters of age and result of KPa from fibroscan between fibrosis and non-fibrosis groups (p <0.05), for age, HBV DNA values and KPa from fibroscan values between positive and negative HBeAg groups, as well as SGPT levels, HBV DNA values and KPa fibroscan values between low and high viremia groups (p <0.05). There was no relation between the value of HBV DNA (status viremia) and the risk of liver fibrosis (p > 0.05, CI: 0.889-1.623).

Conclusion: There was no between HBV DNA status (status viremia) and risk of liver fibrosis.

Key word: HBV Viral load, Fibrosis, Chronic Hepatitis B
ABSTRACT

Evans syndrome
Case Report
Rozi Indra1, Zulfikar Lubis2
1 Clinical Pathology Resident, Faculty of Medicine, University of North Sumatra, Medan
2 Department of Clinical Pathology, Faculty of Medicine, University of North Sumatra, Medan

Background: Evans syndrome is an idiopathic autoimmune disease, in which autoantibodies attack their own red blood cells and platelets, sometimes can attack neutrophils. This condition can lead into Autoimmune Haemolytic Anemia (AIHA) and immune thrombocytopenic purpura (ITP). Evans syndrome is a combination of AIHA with positive direct coomb’s test (DCT) and ITP. Both of these can occur simultaneously or in sequence. Since it was first discovered in 1950, Evans syndrome has been identified as a very rare disease, around 0.8-3.7% of all patients with ITP or AIHA.

Case: A 27 years old female came to Emergency Room (ER) Adam Malik Hospital with chief complaints of abdominal pain feel like stabbed accompanied with nausea, pain in the bones and joints also experienced by patient. The patient has a history of bleeding gums and bruises on the skin. This patient also has a history of consuming herbal medicine. Patient had been treated at Adam Malik Hospital with the same complaints and got 2 bags Packed Red Cell transfusion. Laboratory examination haemoglobin level 6,6 g/dL, leukocytes 8,230 /μL, platelets 35,000 /μL, D-dimer 9,987 ng/ml and positive Direct Coomb Test. The morphology of eritrosit founds tear drop cells, polychromation and fragmentocytes.

Conclusions: Evans Syndrome is a disease that rarely found and often missed attention, so that the exact prevalences is still unknown and this desease can be recurrent. The treatment for Evans syndrome is still not satisfying and the resons of the treatment still varies.

Keywords: Evans Syndrome, Autoimmune Hemolytic Anemia, Immune Thrombocytopenia Purpura, Direct Coomb’s Test.

Comparison between serum TSH measurement using fluorescent immunoassay (FIA) method and eclia method for congenital hypothyroid screening Research
Andrea Aprilia1, Catur Suci Sutrisnani2, Anik Widijanti2
1 Resident Of Clinical Pathology, Faculty of Medicine Brawijaya University, dr. Saiful Anwar Hospital
2 Clinical Pathology Department, Faculty of Medicine Brawijaya University, dr. Saiful Anwar Hospital

Introduction: Congenital hypothyroid (CH) is a disease that leads to permanent disability if it’s late to be managed, and then it’s important to check hypothyroidism screening. The aim of the study is to compare TSH levels between FIA method and ECLIA method for congenital hypothyroidism screening test.

Method: Observational analytical study with cross sectional design. Serum sample from 2 - 7 day old neonates consecutively be collected in January - April 2018. TSH measured paralleled with FIA method (FRENSTM TSH) and ECLIA method (Cobas e411 Roche) and the result was compared and correlated.

Result: From ninety five samples, there was no significant difference between two methods for screening CH. The correlation between two methods was strong (r = 0.971). There were 3 neonates with high levels of TSH in this study from 95 neonates. It shows high prevalence of CH in dr. Saiful Anwar Hospital. Measurement of TSH using FIA method can be used for CH screening since it has strong correlation with ECLIA method and there was no significant difference between both methods. The maximum detection limit FIA method was 25.0 mIU/L then it can be used to check CH screening.

Conclusion: TSH test using FIA method (FRENSTM TSH) can be used for CH screening since it has good correlation and there’s no significant difference with the ECLIA method (Cobas e411).

Keywords: Congenital hypothyroid (CH), TSH, Sandwich FIA, ECLIA.

Analysis of the level of prostate specific antigen (PSA) on medical check up (MCU) participants
Linda Rosita1 , Glosindy Arma Occifa2
1,2 Department of Clinical Pathology, Faculty of Medicine, Universitas Islam Indonesia

Background: Prostate Specific Antigen (PSA) is one of the important biomarkers in diagnosis, follow-up, and determining the prognosis of prostate cancer. The use of PSA for initial screening has reduced the incidence of advanced prostate cancer when diagnosed. PSA examination can be used as an effort for men to find out earlier the progress of prostate cancer. This research aims to figure out the distribution of PSA levels on adult male in population of Yogyakarta.

Methods: This study uses observational design by taking data from medical record of Medical Check Up (MCU) patient with no complaints. The data of the result of PSA examination is processed in a descriptive way to know the profile of PSA levels on adult male and then it is analyzed to know the relationship toward age.

Results: The research subject is limited to the adult man who undertook medical check up (MCU) in JIH Hospital Yogyakarta, with total of 250 participants fulfilling inclusion and exclusion criteria. Data is taken from 2014-2018. The average level of total serum PSA are 1.42±1.31 ng/ml for the group of below 40 years, 1,05±0,42 ng/ml for the group of 40-49 years old; 2,49±5,02 ng/ml for the group of 50-59 years old; 24,83±122,64 ng/ml for the group of 60-69 years old; 55,4±42,59 ng/ml for the group of 70-79 tahun; and 7,66±6,72 ng/ml for the group of above 80 years old. It shows that level of PSA total serum is getting increase as the age is getting older. This result is in line with previous research in Asian. Statistically, there is a significant correlation between age and PSA levels with r=0,6 and p<0,05.

Conclusion: PSA levels on adult man in Yogyakarta increases along with the increase of age, and those PSA levels is lower than that of other population across the world.

Keywords: PSA, medical check up, age

The temperature differences of febrile non haemolytic transfusion reaction (FNHTR) on the transfusion with leukodepleted PRC and non leukodepleted PRC
Dinda Kamilah1, Dian Widyaningrum2
1 Resident of Clinical Pathology Faculty of Medicine Diponegoro University Semarang
2 Staff of Clinical Pathology Faculty of Medicine Diponegoro University Semarang

Background: One of the components of blood cells are often used for
transfusions is Packed Red Cell (PRC). Blood components transfusion may continues with rapid or delayed transfusion ractions. The most transfusion reactions was fever (55%) or febrile non haemolytic transfusion reaction (FNHTRs). The cause of these events is associated with allogenic leucocytes (the ability to differentiate self cells and non-self cells based on the human leucocyte antigen (HLA) on the cell surface) and release of proinflammatory cytokines such as IL-1, IL-6, IL-8, TNFα, Cell-free DNA (cfDNA), histone and the duration of blood storage.

Methods: Cross-sectional study on 135 patients who received a transfusion leukodepleted PRC and non leukodepleted PRC with the FNHTR transfusion reaction in Hospital Blood Bank Dr. Kariadi Semarang, during January 2017 to July 2018. The Kolmogorov smirnov and Shapiro-wilk test were used to evaluate normality of the data. Mann-Whitney test to analyze the difference, p < 0.05 was considered as significant.

Results and Discussion: The incidence of FNHTR was lower in patients who received leukodepleted PRC (11 patients) than non leukodepleted PRC (124 patients). There were differences in body temperature in the incidence of FNHTR between the two groups (38.1 (38-39) VS 38.4 (38 - 39.2)) with p = 0.046.

Conclusions and Suggestions: There were differences in body temperature in the incidence of FNHTR on the transfusion with leukodepleted PRC and non leukodepleted PRC.

Keywords: FNHTR, leukodepleted PRC, non leukodepleted PRC.

Correlation of serum cytokine interleukin-6, TNF-α, procalcitonin and leukocyte count in patients with suspected sepsis

Erfina Lim 1, Jusak Nugraha2
1Clinical Pathology Specialization Programme, Department of Clinical Pathology Faculty of Medicine Airlangga University- Dr. Soetomo Hospital Surabaya Indonesia
2Department of Clinical Pathology Faculty of Medicine Airlangga University- Dr. Soetomo Hospital Surabaya Indonesia

Background: Sepsis is a cause of non-cardiac death in the hospital. Early and rapid diagnosis of sepsis patients is a challenge to increase the expectancy of life. IL-6 and TNF-α are groups of proinflammatory cytokines that initiate an initial inflammatory response. Procalcitonin is a specific marker of bacterial infection. This study aimed to analyze the correlation of serum cytokine IL-6, TNF-α, procalcitonin and leukocyte count in suspected sepsis patients.

Methods: This was a cross-sectional observational study. The study subjects consisted of 45 patients with suspected sepsis who were examined for procalcitonin level > 0.5 ng/mL. Procalcitonin examination by ELFA (VIDAS™), IL-6 and TNF-α used U-CyTech Elisa kit (Bioscience™) and leukocyte counts with SYMEX-XN 1000.

Results: The levels of IL-6 ranged 0 pg/mL - 73.29 ng/mL (mean 29.43 ng/mL). The values for TNF-α were 0 pg/mL - 390.5 pg/mL (mean 27.62 pg/mL). The mean value of leukocytes was 20.139/μL. There was no correlation between leukocyte counts with IL-6 (p = 0.798 and r = 0.040), TNF-α (p = 0.304 and r = -0.160), procalcitonin (p = 0.323 and r = 0.154). There was no correlation between IL-6 levels with TNF-α levels (p = 0.871 and r = -0.025), procalcitonin levels (p = 0.466 and r = 0.112). There was a weak negative correlation between TNF-α level and procalcitonin levels (p=0.006 and r = -0.403)

Conclusion: There was a weak negative correlation between the level of procalcitonin with TNF-α in suspected sepsis patients.

Key words: Sepsis, Procalcitonin, IL-6, TNF-α

Testicular cancer in a female with 46, XY karyotype

Siti Nurul Hapsari1, Betty Agustina1
1Department of Clinical Pathology, Faculty of Medicine Airlangga University, Dr. Soetomo Hospital, Surabaya, Indonesia

Background: Testicular cancer is now the most common malignancy in young males. Markers available in the management of patients with testicular cancer are alpha fetoprotein (AFP), human chorionic gonadotropin (hCG), and lactate dehydrogenase (LDH). Female patients with androgen insensitivity syndrome (AIS) and pure gonadal dysgenesis have a pure XY karyotype and an increased risk of developing gonadal malignancy.

Case Description: A 26-year-old female, presented with a hardened stomach and primary amenorrhea. Physical examination revealed Tanner Stage I for both the right and left breast and no pubic or axillary hair. On local examination, there was a large firm nontender mass extending across the abdominopelvic region. Gynecological examinations revealed normal labia; however there was clitoromegaly, vagina was blind (5 cm) with absent cervix. Laboratory tests with increased abnormal results were as follows: LDH 3,448 U/L, AFP 1,842.6 ng/mL, Cortisol 22.41 ug/dL and Testosteron 128.7 ng/dL. A MSCT of the abdomen showed a solid mass with no signs of a vagina or uterus. Blood karyotyping results were 46 XY with the presence of SRY gene. Due to an increase in LDH, AFP, Cortisol and Testosteron, with 46 XY karyotyping, Tanner stage 1 breasts, pubic and axillary hair, female genitalia phenotype and abdominal MSCT showing a solid mass with no signs of vagina and uterus, this patient was diagnosed with non seminoma testicular cancer with widespread disease and 46, XY karyotype (male).

Conclusion: Testicular cancer is common in patients with gonadal dysgenesis, due to an increase in malignancy risk.

Keywords: Testicular cancer, non seminoma, female, 46 XY karyotype, SRY gene

CD4-T lymphocyte in cervical cancer patient on pre-and post-chemotherapy

Endah Indriastuti1, Endang Retnowati2, Wita Saraswati2
1 Clinical Pathology Specialization Programme, Department of Clinical Pathology Soetomo Hospital, Faculty of Medicine, Airlangga University Surabaya, Indonesia
2 Department of Clinical Pathology Soetomo Hospital, Faculty of Medicine, Airlangga University Surabaya, Indonesia
3 Department of Obstetrics and Gynecology Soetomo Hospital, Faculty of Medicine, Airlangga University Surabaya, Indonesia

Background: Cervical cancer is a gynecology cancer with the highest incidence in the Dr.Soitomo Hospital, Surabaya. Neoadjuvant chemotherapy with cisplatin has been used to increase radiosensitivity of cancer cells before radiotherapy done in advanced stage cervical cancer patients. This research aimed to know the differences of CD4-T lymphocyte profile in stage IIIB patient before and after chemotherapy administration.

Methods: This reasearch was done in February-September 2018. Seventeen patients out of 31 stage IIIB cervical cancer patients planned to receive neoadjuvant chemotherapy with cisplatin every 3 weeks for 3 series were checked for the CD4 T lymphocyte count and percentage. The examinations were done before the first and after the third chemotherapy administration.

Results: Means+SD of the CD4-T lymphocyte count before
Chemotherapy was 817±314 cells/μL and mean±SD of the CD4-T lymphocyte percentage was 38.96±8.47%. While mean±SD of the CD4-T lymphocyte count after chemotherapy was 881±335 cells/μL and mean±SD of the CD4-T lymphocyte percentage was 39.01±8.50%. There was no significant difference of CD4-T lymphocyte count between before and after chemotherapy (p=0.471). There was also no significant difference of CD4-T lymphocyte percentage between before and after chemotherapy (p=0.866). Both the CD4-T lymphocyte count and percentage tended to increase in postchemotherapy condition.

Conclusion: The CD4-T lymphocyte count and percentage were not significantly different between before and after chemotherapy administration in stage IIIB cervical cancer patients. Both the CD4-T lymphocyte count and percentage tended to increase in postchemotherapy condition.

Key words: CD4, neoadjuvant, advance stage, chemotherapy, cervical cancer

**Evaluation of tp17 recombinant antigen by immunochromatography method for treponemal antibody detection in blood donors**

Dwi Rahayuningsih1, Aryati2, Budi Arifah1
1 Clinical Pathologist Spezialisation Programme, Faculty of Medicine, Airlangga University - Dr. Soetomo Hospital, Surabaya Indonesia
2 Department of Clinical Pathology, Faculty of Medicine, Airlangga University - Dr. Soetomo Hospital, Surabaya Indonesia
3 Blood Transfusion Unit of Surabaya Indonesian Redcross

**Introduction:** Syphilis transmission through blood transfusion makes WHO recommend examination of treponemal antibody in all blood donors. Treponemal antibody was identified to be formed against the membrane of lipoprotein antigen Tp15, Tp17, and Tp47 of T.pallidum. Tp17 antigen may have important role in the pathogenesis of syphilis. Evaluation of Tp17 antigen by CLIA method showed a good diagnostic value. Currently Tp17 antigen by immunochromatography method was available but the diagnostic value has not been widely published. The aim of this study is to determine the diagnostic value of Tp17 antigen by immunochromatography for treponemal antibody detection.

**Method:** Total 100 serum samples with reactive (n=66) and non-reactive (n=34) treponemal antibody screened with ELISA and CLIA methods in blood transfusion unit of Surabaya, Mojokerto, and Sidoarjo redcross from Mei 2018-August 2018 were examined for treponemal antibody using Tp17 antigen by immunochromatography (Standard TNQ Syphilis Ab, Standard Biosensor) with Fluorescent Treponemal Antibody Absorption /FTA-ABS (EUROIMMUN, AG) as gold standard.

**Result and Discussion:** Tp17 antigen by immunochromatography method obtained 69.8% sensitivity, 81% specificity, 86.3% positive predictive value, and 61.2% negative predictive value. The concordance of Tp17 antigen by immunochromatography was moderate and significant with FTA-ABS (k = 0.477 p: 0.000).

**Conclusion:** Tp17 antigen by immunochromatography method showed moderate and significant concordance with FTA-ABS with a sensitivity of 69.8% and specificity of 81%. Further evaluation with TPHA that routinely used as treponemal antibody confirmatory test needs to compare this result.

Key words: syphilis, immunochromatography test, antigen Tp17, treponemal antibody

**Analysis of soluble cluster of differentiation 40 ligand levels between thrombocyte apheresis and thrombocyte whole blood products in Sanglah General Hospital Blood Bank**

Ni Kadek Mulyantari1, I Putu Yuda Prabawa1
1 Departement of Clinical Pathology, Faculty of Medicine, Udayana University Bali-Indonesia

**Background:** Platelet transfusion leaves many problems and controversies such as short storage times, high risk of contamination, poor therapeutic response and often results in transfusion reactions. Transfusion reactions are associated with platelet storage lesion. Increased storage lesions will increase the biological response modifiers such as sCD40L. Soluble CD40L is associated with febrile, allergic, TRALI transfusion reactions. Given the negative impact of sCD40L, it is important to analyze sCD40L in platelets.

**Methods:** This type of research is observational analytic. Samples include 10 thrombocytes of whole blood and apheresis on the first, second, and third day of storage.
second, third days of storage. Two ml of the product was centrifuged and plasma sCD40L was examined using BioVendor ELISA method. Data is analyzed by SPSS.

**Results:** The mean of sCD40L thrombocyte apheresis on the first, second, third days of storage was 4.36±1.34ng/ml, 6.87±1.75ng/ml, 7.27±2.21ng/ml. The mean of sCD40L thrombocyte whole blood on the first, second, third days of storage was 8.36±3.77ng/ml, 9.42±2.58ng/ml and 11.10±4.02ng/ml. Although statistically there were no significant differences, the mean of sCD40L thrombocyte whole blood was higher than sCD40L thrombocyte apheresis. There was a significant positive correlation between the duration of storage of sCD40L levels in the thrombocyte apheresis group (r=0.549;P<0.05) and there was no significant positive correlation between the duration of storage of sCD40L levels in the whole blood thrombocyte group (r=0.315;P>0.05).

**Conclusion:** The mean of sCD40L level of whole blood thrombocyte is higher than thrombocyte apheresis. There was a significant positive correlation between the duration of storage of sCD40L in thrombocyte apheresis.

**Keywords:** Soluble CD40L, thrombocyte apheresis, thrombocyte whole blood

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**ABSTRACT**

**The description of corrected count increment on one hour and 24 hours after platelet apheresis transfusion in Sanglah General Hospital Denpasar**

Anak Agung Ayu Lydia Prawita¹, Ni Kadek Mulyantari², Sianny Herawati²

¹Resident of Clinical Pathology Faculty of Medicine Udayana University/Sanglah Center Public Hospital
²Department of Clinical Pathology Faculty of Medicine Udayana University/Sanglah Center Public Hospital

**Introduction:** Evaluation of therapeutic response after platelet transfusion is very important to measure the success rate of therapy and subsequent management of patients. Evaluation can be done by calculating CCI at 1 hour and or 24 hours after transfusion. The purpose of this study was to determine the response of apheresis platelet transfusion therapy by measuring CCI at 1 hour and 24 hours after apheresis platelet transfusion.

**Methods:** This study was a cross-sectional descriptive study of patients who received apheresis platelet transfusion. A total of 35 samples that had been examined for platelet counts before and after transfusion were measured by CCI at 1 hour and 24 hours. Descriptive statistical analysis was performed to calculate percentages and mean.

**Result:** The mean of platelets transfused 2.7 x 10¹¹ / unit. The mean platelet count before transfusion was 18.5 ± 10³ / μL. The mean platelet increment is 1 hour 25.4 ± 10⁴ / μL and at 24 hours 22.6 ± 10⁴ / μL. Average 1 hour CCI (SD) is 15,036.63 (13,709.73) and CCI 24 hours 13,625.60 (13,580). A total of 63% of the CCI 1 hour measurement reached the target and 37% did not reach the target. Whereas for the 24 hour CCI calculation result 60% of the sample reaches the target and 40% does not reach the target.

**Conclusion:** The response of platelet apheresis transfusion therapy by measuring CCI at 1 hour was 63% reaching the target and 60% reaching the target at 24 hours after transfusion of platelet apheresis.

**Keywords:** Corrected Count Increment, Platelet Apheresis

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**Analysis of corrected count increment in post platelet apheresis transfusion patient**

Lisdiana Amin Asri¹, Sri Juliani², Rachmawati Muhiddin²

¹Specialist Clinical Pathology Science Doctor Education Program of UNHAS Medical Faculty/Dr. Wahidin Sudirohusodo Hospital, Makassar
²Department of Clinical Pathology Sciences of UNHAS Medical Faculty/Dr. Wahidin Sudirohusodo Hospital, Makassar

**Background:** Platelet Refractoriness is a problem in the implementation of platelet transfusion. Platelet Refractoriness is a lack of increased platelets after platelet transfusion. This study was conducted to analyze the increase in platelet counts of patients who received apheresis platelet transfusion by using the Corrected Count Increment (CCI) formula at Dr. Wahidin Sudirohusodo General Hospital, Makassar.

**Methods:** A retrospective observational cross sectional study with 242 thrombocytopenia patients research samples. The success of platelet transfusion was calculated using the CCI formula with CCI values after transfusion of 4.5 x 10⁵/L at 24 hours post transfusion. Statistical analysis uses descriptive statistical calculations, with significant test results if p<0.05.

**Results:** An increase in platelet counts averaged 28.5x10⁵/L, found to be successful in 107 subjects (44.2%) and unsuccessful in 135 subjects (55.8%). The proportion of CCI was found to be higher in men (45.5%) and women (43.2%), the results of statistical tests were not significant (p>0.05). There was a significant relationship
between young age and CCI success (p<0.001). The failure of the high CCI formula in cases of malignancy, infection, bleeding and metabolic disease, statistically significant differences in results. (p<0.05).

Conclusions: The proportion of CCI success is found to be higher in men than in women. Correlation test between age and CCI, found a significant negative correlation, the older the age, the lower the CCI value, and the characteristics of disease diagnosis affect to apheresis transfusion success.

Key Words : Platelet Refractoriness, The Corrected Count Increment (CCI) formula.

Differences of packed red cell sodium level based on storage periods in dr. M Djamil Padang hospital Blood Bank

Hesty Rhauda Ashan¹, Ellyza Nasrul², Zelly Dia Rofinda²
¹Clinical Pathology Specialist Program, Faculty of Medicine, Andalas University/Dr. M. Djamil Hospital, Padang
²Department of Clinical Pathology, Faculty of Medicine, Andalas University/Dr. M. Djamil Hospital, Padang

Introduction: Packed Red Cell (PRC) is blood component obtained after most of its plasma separated from whole blood (WB) and has hematocrit value of 80%. PRC storage temperature are 2-6°C for 21-42 days depend on anti coagulant-preservative that was used. Na⁺ / K⁺ ATPase pump activity was strongly influenced by the temperature. Sodium enter the cell and potassium exit the cell because the pump becomes inactive in 4°C. This process occurs slowly and continuously and the sodium level in PRC plasma decreases as the storage period increased. One of complication from old stored blood transfusion is hyponatremia. The aim of this study was to determine sodium level differences of PRC in ≤14 days and >14 days storage periods in Dr. M. Djamil Padang Hospital blood bank.

Method: This analytical study with cross sectional design conducted from September 2016 to October 2018. Sodium level was measured by electrolyte analyzer. T test was used to analyse data and p<0.05 showed significant result.

Result: Median of sodium level in ≤14 days storage was 150.5 (2.9) mmol/L and in >14 days storage was 143.3 (4.3) mmol/L. There were significant difference in the median of sodium level based on storage periods (p=0.0001).

Conclusion: The PRC sodium level were different in ≤14 days and >14 days storage periods (p=0.0001). There were significant difference in the median of sodium level based on storage periods (p=0.0001).

Key Words: storage period, storage lesion, sodium, packed red cell

Microbiology-Infection

Mortality in sepsis patients at the ICU H. Adam Malik Hospital Medan associated with sofa score

Taufik Abdi¹, Yutu Solihiat², Ratna Akbari Ganie¹
¹Department of Clinical Pathology, Faculty of Medicine, University of North Sumatera / RSUP H. Adam Malik Medan
²Department of Anesthesiology and Intensive Therapy, Faculty of Medicine, University of North Sumatera / RSUP H. Adam Malik Medan

Background: Sepsis is a major cause of mortality in the ICU. Therefore, estimating patient mortality from ICU treatment rooms is very important. Organ failure is one of the causes of high mortality rates for ICU patients. Accordingly we need a biomarker that can predict the mortality in which way it can reflect the concept of inflammation from sepsis. Based on that reason, this study is aimed at looking at the CRP / Albumin ratio associated with the SOFA score to predict mortality in septic patients.

Methods: This study took the blood samples of 58 patients who were being treated at the ICU. Samples were checked for CRP and Albumin on day 1 and 3. At the same time, the SOFA scores and CRP / Albumin ratios were also calculated on day 1 and 3. Finally, the study was conducted after obtaining ethical approval and informed consent.

Result And Discussion: 30 men (51,7%) and 28 women (48,3%) with the youngest was 16 years old and the oldest was 65 years old. The CRP / Albumin ratio for day 1 did not have a significant relationship with day 1 of the SOFA scores (P>0.05) and The CRP / Albumin ratio for day 3 have a significant relationship with day 3 of the SOFA scores (P<0.05).

Conclusion and Suggestion: The CRP / Albumin ratio and SOFA score can predict the mortality of septic patients. Further research is needed to see the CRP / Albumin ratio and SOFA score as a mortality predictor for septic patients.

Keywords: Sepsis, CRP / Albumin ratio, SOFA score

Parasitic infestations in systemic lupus erythematosus

Viva Finhar Insani Nirmala¹, Rossy Melliani², Agustin Iskandar³, Puspita Wardani³
¹Infectious Disease Subspecialty Resident at the Department of Clinical Pathology, Faculty of Medicine, Airlangga University/Dr. Soetomo General Hospital Surabaya
²Clinical pathology Resident at the Department of Clinical Pathology, Faculty of Medicine, Brawijaya University/Dr. Saiful Anwar District General Hospital Malang
³Teaching Staff at the Department of Clinical Pathology, Faculty of Medicine, Airlangga University/Dr. Soetomo General Hospital Surabaya

Background: Systemic lupus erythematosus is a chronic systemic autoimmune disorder with various clinical manifestations caused by the production of autoantibodies against cell nuclei and cytoplasm antigens. This disorder and its treatment also increase the risk of infection or infestation by microorganisms. Parasitic infestations by helmith or protozoa are reported in 2.7% and 8% of LES cases, respectively.

Case Description: A 38-year-old woman complained of fever, diarrhea, nausea, and fatigue for the past 2 days. She was diagnosed with SLE and started receiving steroid therapy 1 year ago. Physical examination revealed low body mass index (BMI), increased pulse pressure, respiratory rate, and axillary temperature, and epigastric pain. The results of urinalysis showed a slightly turbid urine, nitrituria, leukocyturia, trace-hematuria, bacteriuria, and the presence of yeast and rhabditiform larvae of Strongyloides stercoralis and Parmecium sp.

Conclusion: The incidence of parasitic infestations is less frequent than bacterial, viral, or fungal infections. However, its presence needs to be considered in immunocompromised individuals, because infestations can have a fatal impact if not immediately treated. In this paper, we report a case of Strongyloides stercoralis and Parmecium sp. infestations in a SLE patient.

Keywords: Systemic lupus erythematosus, parasitic infestation, Strongyloides stercoralis, Parmecium sp.
Role of outer membrane protein OmpK35 AND OmpK36 of ESBL producing Klebsiella pneumoniae and relation with resistance to antimicrobial drugs

Hidayat, Nasrul Ellyza, Tjong Hong T,
Medical Faculty of Andalas University, Padang, West of Sumatera

Background: Extended spectrum beta lactamase producing Klebsiella pneumoniae generate a major problem for clinical therapeutics and epidemiological study. Klebsiella pneumoniae produces two major porins (OmpK35 and OmpK36) and have been reported previously that loss of OmpK35 and OmpK36 associated with antimicrobial resistance of Klebsiella pneumoniae.

Methods: Ninety isolates of Klebsiella pneumoniae were obtained from various biological samples and identification with automated Vitek system. Analyzed for extended spectrum beta lactamase genes and OmpK35 and OmpK36 porins were detected by polymerase chain reaction. Statistic analysis using Chi Square test with significance if p-value was 0,05.

Results: Forty-two (46,7%) isolates of K. pneumoniae were ESBL producer, thirteen (14,5%) were not found OmpK35 porins, eleven (12,3%) were not found OmpK36 porins and eight isolates were not found both of OmpK35 and K36 porins. The isolates without OmpK35 porin is mostly resistance to amoxycillin clavulanate, cefotaxime, cefazolin, ceftazidime, ceftriaxone, cefepime, aztreonam and ampicillin susbactam as same with isolates without OmpK36. The OmpK36 showed significantly correlation with cefotaxime, cefazidime, ceftriaxone, cefepime, aztreonam and gentamicin and ciprofloxacin resistance.

Conclusion: The presence of OmpK36 porin is mostly related to antimicrobial resistance than OmpK35 porin.

Keywords: OmpK35, OmpK36, ESBL, Klebsiella pneumoniae, Resistance

Correlation between caspase-9 and caspase-3 on sepsis case (Experimental study on the balb / C mencit induced by lipopolysaccharide)

Sotianingsih 1, Suharyo2, Lisyani S3
1 Department of Clinical Pathology, Faculty of Medicine and Health Science, University of Jambi, Jambi
2 Postgraduate Program Undip Semarang
3 Professor of Clinical Pathology, Departement of Clinical Pathology, Faculty of Medicine, Undip, Semarang

Background: Mortality of sepsis in Indonesia reaches more than 50%; it is needed to improve the knowledge about pathophysiology, including the process of apoptotic.

Objective: To describe the LPS induced sepsis which triggers apoptosis intrinsic pathways (expression of caspase-9 and caspase-3)

Research method: An experimental time series randomized post-test -only control group design was applied on 48 Balb / C mice which were divided into 2 group, the control and treatment group was injected intra peritoneal with saline 250 µL/mouse and saline 250 µL + 0.1 mg E. coli LPS/mouse . Each group was divided into 4 different terminated time sub-group: 12th (t12), 24th (t24), 36th (t36) and 48th hours (t48), and examined by IHC for the expression of caspase-9 (Cas9) and caspase-3 (Cas3). Statistics uses mean difference test (Mann-Whitney t test) and correlation test (Spearman’s test).

Results: The LPS induced sepsis in the treatment group compared to control group causes increased: caspase-9 (2.34±0.24<0.82±0.08; p<0.001). Increasing in the treatment group (P) compared to control group (K): all groups Cas3 (1,54±0.10<0.48±0.05; p<0.001), t12 Cas3 (3,25±0.22<0.50±0.06; p<0.001), t24 Cas3 (1,37±0.27<0.45±0.05; p<0.002), and t36 Cas3 (1,03±0.20<0.52±0.22; p=0.002); There was no difference the treatment group compared to control: t48 Cas3 (0,50±0.14<0.43±0.10; p=0.485). There was decreasing pattern on serial time 12, 24, 36 and 48 hours: Cas9 (p<0.001) and Cas3 (p=0.002). There were correlations between Cas9-Cas3 (r=0.835;p<0.001).

Conclusion: The LPS induced sepsis caused an increase of caspase-9 and caspase-3, with decreasing pattern on serial time and strongly interconnected.

Keywords: LPS, caspase-9 and caspase-3

A 40 year old male with post treatment leprosy, type ii leprosy reaction erythema nodosomalous leprsum (ENL), testicular atrophy and hypergonadotropic hypogonadism Case report

Ahmad Mulyadi Sunarya1, M.I. Diah Pramudianti2
1Clinical Pathology Residence, Medical Faculty of Sebelas Maret University/ Dr. Moewardi General Hospital, Surakarta
2 Clinical Pathology Installation, Medical Faculty of Sebelas Maret University/ Moewardi General Hospital, Surakarta

Introduction: Leprosy is a chronic disease caused by the Micobacterium leprae, there are two clinical forms pausibasillary and multibacillary. Leprosy reaction is a chronic episode of leprosy, type I reversal reaction (cellular response) or type II erythema nodosomalous leprsum (ENL/humoral response). Hypergonadotropic hypogonadism is thought to be related to orchitis and atrophy in infected individuals.

Case: A 40 year old male complained of left testicles shrinking, short time erection, low volume of sperm, reddish skin of face, hand and feet, prominent, rough spots, sometimes it was accompanied by pain and fever. Genitalia examination revealed shrinking of left testicles. Laboratory examination obtained decreased total testosterone, increased FSH and LH. Sperm analysis indicated azoospermia. Dermatological examination showed macules and discrete erythema nodules. PA examination revealed of ENL.

Discussion: Patient post treatment leprosy, type II leprosy reactions ENL, atrophy of the left testes (obliterative phase). Micobacterium leprae can cause direct infection or there is an accumulation of immune complexes that causes local damage to testicular tissues, especially leydig cell as a result testosterone and sperm production will be decreased. Pituitary gland response this condition by increasing the production of FSH and LH. Conclusions: 40 year old male with post treatment leprosy, type II leprosy reaction ENL, testicular atrophy and hypergonadotropic hypogonadism.

Keywords: Micobacterium leprae, type II leprosy reaction ENL, testicular atrophy, hypergonadotropic hypogonadism.
The efficiency of anti fungal therapy to patients with funga
positive blood cultures related to availability of anti fungal in Dr. Moewardi General Hospital Surakarta

Pik Siong1, Sidharta B R A2, Saptawati L3
1Clinical Pathology Residency Program, Medical Faculty of Sebelas Maret University / Dr. Moewardi General Hospital Surakarta
2Clinical Pathology Department, Medical Faculty of Sebelas Maret University / Clinical Pathology Installation of Dr. Moewardi General Hospital Surakarta
3Clinical Microbiology Department, Medical Faculty of Sebelas Maret University / Clinical Microbiology Installation of Dr. Moewardi General Hospital Surakarta

ABSTRACT

Background: Anti fungal resistance has been found recently. It’s usage as prophylaxis causes resistance. It should be used rationally and efficiently based on clinical consideration, toxicity, side effects, sensitivity result, anti fungal susceptibility pattern and drug availability

Methods: It was descriptive retrospective research in Clinical Microbiology Installation of Dr. Moewardi General Hospital (DMGH) Surakarta from March 2017 to March 2018. Sensitivity results and therapies were investigated using computer data system, medical record and clinical microbiology installation’s data for totally 54 blood culture samples with fungal growth. Culture uses BacTec, Vitek dan manual. Totally 58 samples without fungal growth had been excluded. Anti fungal therapy were associated to anti fungal availability in pharmacy storage of DMGH.

Result: All 54 blood cultures show fungal growth but 23 (42,6%) therapies match to sensitivity test results, 13 (24,07%) therapies didn’t match to them, 2 (3,7%) patients died without anti fungal therapies, 7 (12,96%) didn’t get anti fungal and 9 (16,67%) with prophylaxis but not be continued. The most diagnosis was sepsis (45; 83,33%). The most isolate was Candida haemulonii (18; 33,33%). Intensive care rooms with majority neonatus and pediatric patients were the two biggest blood fungal growths. Sensitivity test uses Voriconazole, Fluconazole, Fluycytosine, Amphotericine B, Caspofungin, Mycafungin and Nystatin. Pharmacy provides Ketokonazole, Miconazol, Fluconazole and Nystatin.

Conclusion: Anti fungal usage in DMGH is not yet efficient. It should be based on clinically consideration and drug availability related to sensitivity result and susceptibility pattern from microbiology installation.

Keywords: efficiency, anti fungal, sensitivity, drug availability

Diagnostic test of genexpert MTB/RIF examination with ziehl neelsen (ZN) stain and MTB culture in suspect pulmonary tuberculosis patients

Wahono O1, Sidharta R2, Priyambodo J3
1Clinical Pathology Resident, Faculty of Medicine, Sebelas Maret University, Surakarta
2Departement of Clinical Pathology, Faculty of Medicine, Sebelas Maret University / Dr. Moewardi General hospital (RSDM), Surakarta
3Departement of Clinical Microbiology, Faculty of Medicine, Sebelas Maret University / Dr. Moewardi General hospital (RSDM), Surakarta

Background: Tuberculosis (TB) of airborne diseases caused by bacillus Mycobacterium tuberculosis (MTB). TB usually infects both inside and outside of the lungs. Early diagnosis is very important for patient management in order to obtain good results, conventional diagnostic methods (ZN) for MTB are slow and less sensitive. This study will evaluate GeneXpert MTB / RIF examination in diagnosing TB in its current relation as the most sensitive and specific diagnostic test so that it can be applied for efficient management of TB treatment

Methods: Total of 90 TB suspicious patients who performed sputum examinations with Genexpert MTB / RIF, ZN staining and culture were carried out on the same day in the Surakarta RSDM microbiology laboratory. Retrospective research data collection with a period of February - December 2017. Diagnostic tests were carried out (sensitivity, specificity, NDP, NDN, RKP, RKN, accuracy) for ZN staining and Gene Xpert MTB / RIF examination with MTB culture as gold standard

Result: Diagnostic test results of GeneXpert MTB / RIF examination (90%, 84.8%, 45.5%, 98.5%, 6, 0.1, 86) and ZN staining checks (72.7, 93.7, 61.5, 96.1, 12, 0.3, 91) Conclusion: GeneXpert MTB / RIF examination and ZN staining have almost the same specificity but the sensitivity of the GeneXpert MTB / RIF is higher. GeneXpert MTB / RIF examination can be a useful diagnostic method for TB suspect patients with either positive or negative smear due to the speed and simultaneous detection of RIF drug resistance

Keywords: GeneXpert MTB / RIF, Ziehl Neelsen Staining, MTB Culture

Development of an efficient PCR enhancer for highly GC-rich DNA sequences

Ima Arum Lestari1, Yunita Sabrina2, Dewi Suryani2
1Clinical Pathology Department of Medical Faculty Mataram University
2Microbiology Department of Medical Faculty Mataram University

Background: Polymerase chain reaction (PCR) has become a fundamental technique in molecular biology. Nonetheless, PCR amplifications are frequently impaired by high GC content of the target sequence, leading to low yield and specificity of products, with no product at all in the worst cases. Locally high-temperature melting regions within the template can act as permanent termination sites.

Method: Here we designed and tested an effective and low-cost PCR enhancer, a combination of dimethyl sulfoxide (DMSO) and magnesium chloride (MgCl2) that broadly enhanced the qualitative output of PCRs.

Result: It was found that PCR enhancer containing 10% (v/v) of DMSO and 1,5 mM of MgCl2 improved the amplification of GC-rich template of M. tuberculosis gene. Therefore, this PCR enhancer could be widely useful to improve the amplification of GC rich construct from other genome

Keywords: PCR, GC-rich template, PCR Enhancer, DMSO, MgCl2

Tuberculous pericarditis leading to cardiac tamponade in patients primary myelofibrosis: importance of screening for latent tuberculosis prior to janus kinase inhibitor therapy

Lingnawati1, Nuri Dyah Indrasari2
1Clinical Pathology Residency Programme, Faculty of Medicine Indonesia University, Cipto Mangukusumo National Central General Hospital, Jakarta.
Background: Tuberculous pericarditis refers to an infection of pericardium by the bacterium *Mycobacterium tuberculosis*. Cardiac tamponade is one of the serious complications that can be life-threatening if not recognized and treated promptly. This extrapulmonary tuberculosis accounts for only <1% of all tuberculosis (TB) cases in non-endemic areas, but the most common cause of pericarditis in Africa, Asia, and other regions where TB remains a major public health problem, especially in immunosuppressed. Janus kinase (JAK) inhibitors, such as ruxolitinib are used in patients with primary myelofibrosis. It also exerts immunosuppressive activity. This condition increases the risk of developing TB disease.

Case Description: A 73-year-old female on ruxolitinib for primary myelofibrosis presented with fever, pleuritic chest pain, dry cough, and dyspnea. During her admission, she developed clinical signs of cardiac tamponade confirmed with echocardiography, which reveals a massive pericardial effusion and treated with an urgent drainage (pericardiocentesis). Pericardial fluid examination showed criteria for exudate, adenosine deaminase level increases significantly, positive culture and polymerase chain reaction for *M. tuberculosis*. Subsequently, she was treated with first-line antituberculosis drugs of category 2. The patient has a history lymphadenopathy TB and no screening investigations prior to initiation of ruxolitinib.

Conclusion: A case of tuberculous pericarditis complicated by cardiac tamponade with suspected reactivation extrapulmonary tuberculosis while on JAK inhibitors therapy for primary myelofibrosis. This case highlights the importance of screening for latent tuberculosis prior to JAK inhibitor therapy, especially in patients with a history of TB infection.

Keywords: tuberculous pericarditis, reactivation, JAK inhibitors.

A description of malaria cases based on SPR, PR, proportion, disease stage, and parasite density in 2017 at Mitra Masyarakat Hospital Mimika

I Kadek Ludi Junapatia, Elsa Julius
Mitra Masyarakat Mimika Hospital

ABSTRACT

Background: The National Sports Week (Indonesian: Pekan Olahraga Nasional, PON) in 2020 will take place in Papua, but Mimika Regency, as one of its accomplished area, still has a high Annual Parasite Incidence (API) of malaria. This study aims to determine the description of malaria cases based on Slide Positivity Rate (SPR), Parasite Rate (PR), proportion, stage and parasite density.

Methods: This study used descriptive retrospective data from laboratory data of patients who underwent thick blood smear examination for malaria during June-November 2017 in DR. Moewardi Regional Public Hospital (RSDM), Surakarta.

Results: The amount of patients in this study was 613 patients with Gram staining and identification on VITEK 2 for pus samples.

Conclusions: A total discrepancy of 307 (50%), major discrepancy (Gram different) 101 (16.5%) and false negative 206 (33.6%). Discrepancies occur may indeed be a mistake due to several factors such as technical coloring, interpretation process or due to the nature of bacteria that are often misinterpreted, but also may not be errors, where there is a selection mechanism for bacterial colonies to be identified in VITEK 2.

Conclusion: Further prospective research needs to be done more systematically to be able to know more about potential mistakes that might occur.

Keywords: Pyogenic infection, gram stain, VITEK 2

Antibiotic Resistance Pattern of Hospital-acquired Pneumonia (HAP) Patient Base on Laboratory-based and Clinical-based Surveillance at Dr. Hasan Sadikin Central General Hospital Bandung

Donniko1, Ida Parwati1, Adhi Kristianto S.2
1Clinical Pathologist Resident of Faculty Medicine, Padjajaran University, Bandung
2Department of Clinical Pathology Faculty Medicine, Padjajaran University, Dr. Hasan Sadikin, Bandung

Introduction: Hospital-acquired pneumonia (HAP) is the world’s leading cause of death in nosocomial infections. Performing antibiogram from surveillance data for empirical therapy purpose is one of HAP management programs. Surveillance of HAP data can be obtained actively (clinically-base) or passively (laboratory-based surveillance) because the determination of HAP depends on the patient clinical appearances and might be supported by microbiological examination. The aim of this study is to observe
Susceptibility pattern of antifungal of candida Spp.
In Dr. Hasan Sadikin General Hospital Bandung
September 2017–July 2018
Ryan Susanto1, Anna Tjandrawati, Adhi Kristianto Sugianti2
1Clinical Pathology Resident, Medicine Faculty, Padjadjaran University;
2Clinical Pathology Department, Medicine Faculty, Padjadjaran University

Introduction: Candida infection increases the risk of death as well the duration of hospital stays. Candida infection is most common caused by four candida species: Candida albicans (43%), C. glabrata (25%), C. parapsilosis (18%), and C. tropicalis (9%). The widespread use of antifungal as preventive therapy causes an increase in antifungal resistance. The purpose of this study is to determine the antifungal susceptibility pattern of Candida Spp.

Method: The population of this study is based on data isolates of Candida. The susceptibility test was conducted during the period of September 2017 to July 2018 at RSCHS. The research data was taken retrospectively from the laboratory information system. The research variables are: the name of isolate species, the type of specimen, gender, the age and the type of antifungal tested. The data is presented in the form of quantities and percentages on tables and graphs.

Results: From 265 data Candida spp. isolates, 239 data were included. Candida albicans was found 51.9% of isolates, whereas 48.1% was C. non-albicans. Candida albicans susceptibility to antifungal (capsofungin, flucytosine, voriconazole) was 94-97%, whereas Candida non-albicans susceptibility was 95-97%.

Conclusion: Antifungal susceptibility of Candida Spp. is high (>90%). Regular monitoring of antifungal sensitivity still needs to be done to monitor resistance event and guidelines for empirical antifungal therapy.

Keywords: antifungal, Candida, susceptibility pattern.

Vancomycin resistant staphylococcus aureus (VRSA) and vancomycin intermediate staphylococcus aureus (VISA) description in Hasan Sadikin General Hospital Bandung
Towifah Fauziah Choerunisa1, Adhi Kristianto Sugianti2, Nina Tristina1
1 Clinical Pathology Resident, Faculty of Medicine Universitas Padjadjaran;
2 Clinical Pathologist, Faculty of Medicine Universitas Padjadjaran. towifahfauziah24@gmail.com

Introduction: Staphylococcus aureus (S. aureus) is a bacterium that causes infection in various organs. Antibiotic resistance in S. aureus has become a health problem. The emergence of vancomycin resistant S. aureus (VRSA), occurs in various countries around the world. This study aims to determine the description of VRSA and vancomycin-intermediate S. aureus (VISA) at the Central General
Bone marrow suppression in typhoid fever: the role of morphological examination and culture of bone marrow aspirates for diagnosis and clinical management

Miyko Prastyawan1, Galih Wisnu Prabowo2, Faisal Heryono3, Rizka Humardewayanti5, Andaru Daheshidewi2
1 PPDS I of Clinical Pathology and Laboratory Medicine, FKKMK UGM / General Hospital Dr Sardjito, Yogyakarta.
2PPDS I of Internal Medicine, FKKMK UGM / General Hospital Dr Sardjito, Yogyakarta.
3 Department of Internal Medicine, FKKMK UGM / General Hospital Dr Sardjito, Yogyakarta.
4 Department of Clinical Pathology and Laboratory Medicine, FKKMK UGM / General Hospital Dr Sardjito, Yogyakarta.

Background: Bone marrow suppression is a life-threatening complication in typhoid but often overlooked. It is presented a case of prolonged fever suspected typhoid with pancytopenia explored by morphological examination and culture of bone marrow aspirates.

Case description: A 19-year-old woman referred to Emergency Department with prolonged fever, melena, and pancytopenia suspected hematological malignancy. Tubex TF® test result supported typhoid infection, however the etiology of pancytopenia in this case was unclear and needed further investigation. Hypocellular marrow with an increased number of hemophagocytosis was found on morphological examination of bone marrow aspirates, it didn’t support any hematological malignancy. Due to definite diagnosis, the culture of bone marrow aspirates was performed by applying standard procedure and showed growth of Salmonella typhi. These findings strengthened the assumption of pancytopenia related typhoid. Levofloxacin was given as definitive therapy based on the results of antibiotic susceptibility tests. Pancytopenia was resolved and the patient’s clinical condition was improved on the 10th day.

Conclusion: Bone marrow suppression can occur in typhoid even though the incidence is not widely reported. Prolonged fever with pancytopenia needs to be explored until performed a culture of S. typhi and antibiotic susceptibility test. Proper diagnosis and management are useful to reduce morbidity and mortality.

Keywords: pancytopenia, typhoid, hemophagocytosis, culture of bone marrow aspirates, Salmonella typhi.
ABSTRACT

Diagnostic value of adenosin deaminase (ADA) serum for pulmonary tuberculosis

M. Saiful Rahman¹, Aryati²
¹Clinical Pathology Specialization Program, Faculty of Medicine Airlangga University, Dr. Soetomo Hospital, Surabaya Indonesia
²Department of Clinical Pathology, Faculty of Medicine Airlangga University, Dr. Soetomo Hospital, Surabaya Indonesia

Background: The diagnosis of tuberculosis in Indonesia still rely on acid fast bacilli (AFB) examination from sputum smears but this examination has a weakness which difficulty in obtaining good quality sputum. Sputum cultures and molecular rapid tests or Gene Xpert have been widely used but require a relatively long time and are expensive. Serum Adenosine Deaminase (ADA) is an examination that requires an easily retrieved sample in a relatively short time. This research was to analyze serum diagnostic tests existing with pulmonary tuberculosis patients.

Methods: A cross sectional study was done from March to August 2017. Comprising 89 serum specimens from 45 positive smear pulmonary TB patients and or one from positive culture or gene xpert examination, 44 serum non-tuberculosis patients according to the clinician. Serum ADA activity was measured by the ADA test device Erba ™ XL 600™ ADA kit (Erba ™) reagent.

Results: The mean serum ADA in pulmonary tuberculosis patients was higher compared to other patients with pneumonia (20.26 IU/L vs. 13.95 IU/L, p <0.024) or lung cancer (20.26 IU/L vs 15.6 IU/L, p <0.001). This study showed that serum ADA levels were greater than or equal to 20.26 IU/L, with a sensitivity of 86.6%, specificity of 59% AUC 0.813 (p <0.05 and CI 95%).

Conclusion: ADA serum with a high percentage of sensitivity can be used as an alternative test that is useful as a supporting test for the diagnosis of pulmonary tuberculosis.

Key words: Adenosine deaminase (ADA), Pulmonary Tuberculosis, Adenosine deaminase serum.

Role of glutamate dehydrogenase and toxins A/B for detection of clostridium difficile infection in diarrhea patients due to antibiotic use

Rima Hayyu Chrisnanda¹, Puspa Wardhani²
¹Clinical Pathology Specialization Program, Faculty of Medicine Airlangga University, Dr. Soetomo Hospital, Surabaya Indonesia
²Department of Clinical Pathology, Faculty of Medicine Airlangga University, Dr. Soetomo Hospital, Surabaya Indonesia

Introduction: Improper use of antibiotics is a risk factor for C. difficile infection. The increase incidence of C. difficile infection is one of the failure indication of infection prevention and control practices in hospitals. The purpose of this study was to analyze the prevalence of diarrhea due to C. difficile infection in the ICU and hospitalization in the Dr. Soetomo Hospital Surabaya.

Methods: Stool samples were taken from 31 diarrhea patients with 2 x 24 hours of antibiotic use who were admitted to the ICU and hospitalized at internal medicine ward of Dr. Soetomo Hospital Surabaya from August 2017-May 2018. Each sample was examined for glutamate dehydrogenase (GDH) and toxins A and B of C. difficile. The results of this study were carried out using experimental descriptive methods.

Results: The results obtained from all of these samples were one sample or 3% showing positive results and 30 sample or 97% showing negative result for both toxins A/B and GDH enzyme so it can be concluded that the incidence of diarrhea in these patients is not due to C. difficile infection but because of other causes.

Conclusion: Only one sample was tested positive, while the remaining 31 samples gave negative results so it was concluded that the cause of diarrhea from these patients was due to a virus, fungus, or other bacterial infection. More sample collection is expected to provide more accurate data about C. difficile infection so that it can help to fulfill data for infection prevention and control in hospitals.

Key word: Clostridium difficile, glutamate dehydrogenase, toxin A/B of C. difficile

Differences of antithrombin iii levels in neonatal sepsis positive blood cultures and negative blood cultures

Prima Indah Siridjan¹, Ricke Loesnari¹, Guslihan Dasa Tjipta²
¹Department of Clinical Pathology Faculty of Medicine University of Sumatera Utara Medan
²Department of Pediatric Faculty of Medicine University of Sumatera Utara Medan

Background: Fetal and neonatal hemostatic systems are dynamic. Coagulation and inhibitors of coagulation factors are progressively synthesized by the fetus which begins especially after 34 weeks of pregnancy and the initial hours after birth. Sepsis is one of the main factors that causes mortality and morbidity in neonates. The neonatal hemostatic system generally shifts towards hypercoagulability. During sepsis, this hypercoagulability is exacerbated by an imbalance of coagulation and inhibitors of coagulation factors including antithrombin III. The aim of this study was to determine differences of antithrombin III levels in neonatal sepsis positive blood cultures (proven sepsis) and negative blood cultures (unproven sepsis).

Methods: The subjects of this study were 26 patients of neonatal sepsis, which consisted of 13 positive blood cultures and 13 negative blood cultures. Levels of antithrombin III were examined for glutamate dehydrogenase (GDH) and toxins A and B of C. difficile infection. The increase incidence of C. difficile infection is one of the failure indication of infection prevention and control practices in hospitals. The purpose of this study was to analyze the prevalence of diarrhea due to C. difficile infection in the ICU and hospitalization in the Dr. Soetomo Hospital Surabaya.

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Key word: Clostridium difficile, glutamate dehydrogenase, toxin A/B of C. difficile

Role of glutamate dehydrogenase and toxins A/B for detection of clostridium difficile infection in diarrhea patients due to antibiotic use

Rima Hayyu Chrisnanda¹, Puspa Wardhani²
¹Clinical Pathology Specialization Program, Faculty of Medicine Airlangga University, Dr. Soetomo Hospital, Surabaya Indonesia
²Department of Clinical Pathology, Faculty of Medicine Airlangga University, Dr. Soetomo Hospital, Surabaya Indonesia

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Key word: Clostridium difficile, glutamate dehydrogenase, toxin A/B of C. difficile

Differences of antithrombin iii levels in neonatal sepsis positive blood cultures and negative blood cultures

Prima Indah Siridjan¹, Ricke Loesnari¹, Guslihan Dasa Tjipta²
¹Department of Clinical Pathology Faculty of Medicine University of Sumatera Utara Medan
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Background: Fetal and neonatal hemostatic systems are dynamic. Coagulation and inhibitors of coagulation factors are progressively synthesized by the fetus which begins especially after 34 weeks of pregnancy and the initial hours after birth. Sepsis is one of the main factors that causes mortality and morbidity in neonates. The neonatal hemostatic system generally shifts towards hypercoagulability. During sepsis, this hypercoagulability is exacerbated by an imbalance of coagulation and inhibitors of coagulation factors including antithrombin III. The aim of this study was to determine differences of antithrombin III levels in neonatal sepsis positive blood cultures (proven sepsis) and negative blood cultures (unproven sepsis).

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Key word: Clostridium difficile, glutamate dehydrogenase, toxin A/B of C. difficile
ABSTRACT

**Determination of MDR-TB Activity in Childhood in Dr. Saiful Anwar General Hospital Malang**

**Method:** Observational study with cross sectional design. Subjects were children infected from outpatient children from February until July 2018. IL-4 levels were measured in 46 children with TB who were confirmed by positive blood cultures and negative interferon gamma release assays (IGRA).

**Result:** The ROC curve shows AUC 0.624 (95% Confidence Interval: 44.0% - 80.7% p = 0.178) and the best cut-off value from IL-4 to predict TB disease activity is greater or equal to 0.45 pg / ml with sensitivity: 67.7% and specificity: 54.0%.

**Conclusion:** The mean level of IL-4 in patients with active TB is higher compared to latent TB. IL-4 has a diagnostic value that is in determining the child's TB activity.

**Keywords:** Interleukin 4, tuberculosis

**Diagnostic value of interleukin-1B and high sensitivity CRP level on determining tuberculosis activity in childhood in Saiful Anwar General Hospital Malang**

Desy1, Agustin Iskandar2, Ery Oliviano3

1Clinical Pathology Resident of Brawijaya University
2Clinical Pathology Department of Brawijaya University, Malang
3Pediatric Department of Saiful Anwar General Hospital, Malang

**Background:** From 9 million cases in whole world, 1 million are children less than 15 years old. Each year, there were 500,000 childhood in worldwide infected by Tuberculosis. Clinical manifestations and radiology figure still difficult to assess Tuberculosis activity in childhood. Interleukin (IL-1B) is proinflammatory cytokine that involve as mediator in Tuberculosis infection. High sensitivity C-Reactive Protein (hs-CRP) is acute-phase reactants that increased in infection or inflammation. Required to identify parameters that involve in childhood Tuberculosis activity. Aim of this research is to evaluate diagnostic value between IL-1B and hs-CRP with disease activity in Tuberculosis pediatric patients.

**Methods:** Observational study with cross sectional design. Subjects were Tuberculosis infected from outpatient children from February until July 2018. IL-1B with ELISA and hs-CRP with immunoturbidimetric assay.

**Results:** All 46 patients were included, 31 with active Tuberculosis and 15 non-active Tuberculosis. Independent T-test and Chi square showed significant difference p=0.036 and p=0.025 between IL-1B and hs-CRP level with disease activity (p=0.05). IL-1B with Tuberculosis activity showed AUC, sensitivity, specificity and cut-off ; 0.628(p=0.163), 58%, 47% and 3.5 pg/mL, respectively. hs-CRP with Tuberculosis activity showed AUC, sensitivity, specificity and cut-off ; 0.301(p=0.030), 60%, 40% and 0.24 mg/dL, respectively. These examinations were important parameters in determining Tuberculosis activity in childhood.

**Conclusions:** There are significant difference between IL-1B and hs-CRP with Tuberculosis activity in childhood. IL-1B had higher diagnostic value than hs-CRP to determine childhood Tuberculosis activity. Required cohort study to evaluate factors that affect Tuberculosis activity in childhood.

**Keywords:** Tuberculosis, disease activity

**Diagnostic value of interferon gamma release assays (IGRA) by using quantiferon®-TB gold plus in determining childhood tuberculosis activity in Dr. Saiful Anwar General Hospital Malang**

Dian Luminto1, Agustin Iskandar2, Ery Oliviano3

1Clinical Pathology Specialist Program, Faculty of Medicine, Brawijaya University/ Dr. Saiful Anwar General Hospital, Malang
2Department of Clinical Pathology, Faculty of Medicine, Brawijaya University/ Dr. Saiful Anwar General Hospital, Malang
3Department of Pediatric, Faculty of Medicine, Brawijaya University/ Dr. Saiful Anwar General Hospital, Malang

**Introduction:** IGRA is one of diagnostic tool that has been used to help diagnosing Tuberculosis (TB). But, using of IGRA to diagnose TB activity still has few reports. The aim of this research is to inform the diagnostic value of IGRA using QuantiFERON®-TB Gold Plus (QFT-Plus) to determine childhood TB activity.

**Method:** Observational analytical cross sectional study to determine diagnostic value of IGRA using QFT-Plus in 35 samples with clinical manifestation TB infection. Mann-Whitney test and ROC are being used.

**Result:** There is a significant difference in TB1 and TB2 tubes from Mann-Whitney test (p<0.05), according to TB pathogenesis which said that T cell from individual that has been exposed with tuberculosis antigen will produce Interferon-Gamma (IFN-γ) if he is being exposed again with micobacterial antigen, which are ESAT-6 and CFP-10. IGRA examination using patient sera that had been suspected childhood TB show 70% sensitivity, specificity 53% in Nil tube with cut off 0.550 IU/mL; 76% sensitivity, 54% specificity in TB1 tube cut off 0.09 IU/mL; 70% sensitivity, 54% specificity in TB2 tube with cut off 0.1 IU/mL to determine TB activity.

**Conclusion:** Diagnostic value of IGRA using QFT-Plus is good enough to determine TB activity in child which is the biggest AUC value in TB2 tube.

**Keywords:** Tuberculosis, child, IGRA, diagnosis

Comparison of diagnostic test of neutrophil lymphocyte count ratio on procalcitonin in sepsis patients in Dr. Saiful Anwar Malang Hospital

Yeni Ayu Prihastutis1, Agustin Iskandars2 Muhammad Anshory3
1Resident Clinical Pathology Department, Faculty of Medicine Brawijaya University Malang/ dr. Saiful Anwar General Hospital, Malang
2Clinical Pathology Department, Faculty of Medicine Brawijaya University Malang/ dr. Saiful Anwar General Hospital, Malang
3Internal Medicine Department, Saiful Anwar General Hospital, Malang

ABSTRACT

Background: Sepsis is the most severe manifestation of acute infection which can cause death in 30-50% of cases. Rapid and accurate diagnosis of sepsis is a challenge for clinicians and laboratories. The neutrophil ratio of lymphocytes is a potential index to detect the occurrence of sepsis. This examination is easy, fast and cheap. On the other hand procalcitonin is currently widely used as a newer indicator in diagnosing pre-shock but is rarely done because it requires a large cost. This study aims to compare the diagnostic value of neutrophil lymphocyte ratio with procalcitonin as a marker in septic patients.

Method: This research is a case control analytic research conducted in March to June 2018. Examination of neutrophils and lymphocytes using the flowsitometry method was carried out on Sysmex XN-1000 while procalcitonin examination used Elecsys BRAHMS PCT using ECLIA method. Diagnostic values are analyzed using the ROC curve, and the cut-off value is determined. Sensitivity, specificity, positive predictive value, negative predictive value, accuracy is calculated with 2x2 tables.

Result: The samples were 40 septic patients who were hospitalized and diagnosed based on clinical symptoms by the clinician as septic patients obtained from medical records. At procalcitonin cut-off values of 2.24 ng/ml obtained a sensitivity of 93%, specificity of 86.7%, positive predictive value of 86.9%, and negative predictive value of 92.4%. At the cut-off value of Neutrophil Lymphocyte Count Ratio (NLCR) 5.06 there was a sensitivity of 80%, specificity of 76.7%, positive predictive value of 76.9%, and negative predictive value of 79.1%.

Conclusion: Procalcitonin has a better diagnostic value than neutrophil lymphocyte ratio in diagnosing bacterial sepsis.

Keywords: procalcitonin, neutrophil lymphocyte count ratio, sepsis

Correlation between serum mid regional proadrenomedullin and sequential organ failure assessment (SOFA) score in patient sepsis

Hapsari Pujiyantia,1 Leni Lismayantib,2 Tiene Rostinic,2 Ida Parwatic2
1Dinas Kesehatan Lampung Selatan, 2Departemen Patologi Klinik Fakultas Kedokteran Universitas Padjadjaran Rumah Sakit Dr. Hasan Sadikin Bandung

ABSTRACT

Background: most of sepsis will developed to multi organ failure (MOF). To assess manifestation of MOF we use SOFA score. SOFA score uses several laboratory parameters for each organ, which need time and a high cost. Now, there is Mid Regional ProAdrenomedullin (MR proADM) biomarkers which can be used as a marker of MOF in sepsis because MR proADM was secreted by endothelial that can increase in sepsis or bacterial infection. The aim of this study is to analize the correlation between serum MR proADM levels with SOFA score.

Methods: this is research is an observational analytical study with cross sectional study design which conducted in Dr. Hasan Sadikin (RSHS) Bandung from August 2017 to July 2018. This study is part of “Sepsis Biomarker” study. Sample of this study were 50 storage serum from the Sepsis Biomarker” study, which MR proADM was measured.

Results: showed a moderate positive correlation between serum MR proADM level with SOFA score (r = 0.582, p=0.000), it means MR proADM serum is directly proportional with SOFA score.

Conclusion: There is a moderate positive correlation between serum MR proADM levels and SOFA score, so that MR proADM can be considered as one of the biomarker of the multi organ failure.

Keyword: MOF, sepsis, MR proADM serum, SOFA score

Correlation between procalcitonin and lactate levels with serum creatinine as acute kidney injury parameter in sepsis patients

Fauzan Indra M Lubis1, Ricke Loesnhari1
1Departement of Clinical Pathology, Faculty of Medicine, University of North Sumatera-Haj Adam Malik Hospital, Medan

ABSTRACT

Background: Acute systemic inflammation in sepsis results in refractory hypotension caused by decreased systemic vascular resistance. Hypoperfusion causes homeostasis disturbance that untreated without intervention. Kidneys were the organs that often affected and usually progress to acute kidney failure (Acute Kidney Injury / AKI). Mortality rate of sepsis with AKI was 70% which mean it was a serious medical problem.

Materials and Methods: This study was an analytic observational study, conducted at Clinical Pathology Department/ Adam Malik Hospital Medan on April-July 2018. Serum and arterial blood from 58 septic patients at ICU were taken for the examination of procalcitonin, creatinine and lactate levels. Procalcitonin was examined on admission, lactate and creatinine were examined at admission (H0), 24 hours (H1) and 48 (H2) after being treated in ICU.

Results: The mean age of patients studied was 50.7 ± 14.4 years (51.7% male and 48.3% female). Procalcitonin on admission was not associated with creatinine levels at three measurements (p = 0.433; 0.281 and 0.222). Lactate were significantly associated with creatinine in H2 (p = 0.005; r = 0.367) but were not at H0 (p = 0.408; r = 0.111) and H1 (p = 0.303; r = 0.138).

Conclusion: Creatinine levels were not associated with procalcitonin but associated with lactate levels at 48 hours after admission (H2). Lactate as an indicator of anaerobic metabolism can be used as a marker of the onset of kidney dysfunction in critical patients.

Keywords: Procalcitonin, lactate, creatinine

Diagnostic value of IgG and IgM encode tb rapid test to support lung tuberculosis diagnosis

Notrisia Rachmayantis1, Aryati1, Tutik Kusmiati2
1Clinical Pathology Spesialization Programme, Department of Clinical Pathology Faculty of Medicine, Airlangga University- Dr Soetomo Hospital, Surabaya, Indonesia
2Department of Clinical Pathology, Faculty of Medicine, Airlangga University- Dr Soetomo Hospital, Surabaya, Indonesia

ABSTRACT

Background: Tuberculosis is a disease that still spreads in the world with new infections every year. It can affect any organ in the body, but the most affected is the lung, because it is the organ that takes in and excretes air. The number of lung tuberculosis has increased significantly. Rapid tests for tuberculosis can be used to support diagnosis. Tuberculosis rapid tests are divided into rapid serum tests and Rapid TB test. The aim of this study is to examine the diagnostic value of IgG and IgM encode tb rapid test to support lung tuberculosis diagnosis.

Methods: this research is an observational analytical study with cross sectional study design which conducted in Dr. Hasan Sadikin (RSHS) Bandung from August 2017 to July 2018. This study is part of “Sepsis Biomarker” study. Sample of this study were 50 storage serum from the Sepsis Biomarker” study, which MR proADM was measured.

Results: showed a moderate positive correlation between serum MR proADM level with SOFA score (r = 0.582, p=0.000), it means MR proADM serum is directly proportional with SOFA score.

Conclusion: There is a moderate positive correlation between serum MR proADM levels and SOFA score, so that MR proADM can be considered as one of the biomarker of the multi organ failure.

Keyword: MOF, sepsis, MR proADM serum, SOFA score
**ABSTRACT**

**Myeloperoxidase index (MPXI) diagnostic value in bacterial infections**

Mirna Rahmahfindi, Betty Agustina Tambunan, Paulus Budiono Notopuro

1. Specialization Program Clinical Pathology, Faculty of Medicine University of Airlangga-Dr. Soetomo Hospital, Surabaya
2. Department of Clinical Pathology, Faculty of Medicine University of Airlangga-Dr. Soetomo Hospital, Surabaya

**Background:** Infectious diseases are still a problem in Indonesia. Myeloperoxidase (MPO) is a substance released by neutrophils, activating the synthesis of hypochloric acid (HOCL) from hydrogen peroxide (H2O2) and chloride ion (Cl-). HOCL plays an important role as the body’s defense against infection. Myeloperoxidase Index (MPXI) is a parameter in the hematology analyzer Advia 2120i based on the principle of flowcytometry. This study aimed to determine the diagnostic value of MPXI in patients with bacterial infections.

**Methods:** The study was a cross sectional observational analysis. The samples consisted of a group of bacterial infection patients and a group of healthy persons. The study specimens used whole blood + anticoagulant (EDTA) in a purple tube with a volume of 2.7 mls to be used to check the MPXI value using the ADVIA 2120i hematology analyzer, as well as the healthy group.

**Results:** The study subjects consisted of a group of patients with bacterial infections (69 patients) and groups of healthy people (33 persons). Analysis of the MPXI ROC curve with a cut-off ≥ -5.8 and < -5.8 showed AUC of 0.323 (CI = 95%, p = 0.004), sensitivity 34.8%, specificity 39.4%, Positive Predictive Value (PPV) 54.5%, Negative Predictive Value (NPV) 22.4%.

**Conclusion:** MPXI value has a low diagnostic value so it is not recommended as a diagnostic tool for bacterial infections and further research is needed.

**Key words:** Myeloperoxidase Index, MPO (Myeloperoxidase), Sensitivity, Spesivisity, Positive Predictive Value (PPV), Negative Predictive Value (NPV).

**Proteus mirabilis in the lupus patients of systemic erythematosus**

Case Report

Doddy Febrayani, Ricke Loesnihanari

1. PPDS Clinical Pathology, Faculty of Medicine, University of North Sumatra, Medan
2. Department of Clinical Pathology, Faculty of Medicine, University of North Sumatra, Medan

**Background:** Proteus mirabilis is one of the most common gram-negative pathogens encountered in clinical specimens, including bloodstream infections (BSI), urinary tract, wound. Proteus mirabilis is a common cause of human infections and accounts for approximately 3% of nosocomial infection, while ESBL-producing P. mirabilis strains are usually resistant to several antimicrobial agents and can result in difficult-to-treat infections. Systemic lupus erythematosus (SLE) is a chronic autoimmune disease that attacks various systems in the body. The incidence with female eight times more than men. Infections are an important cause of mortality and morbidity in patients with systemic lupus erythematosus (SLE). Bacteria are the most common agents, followed by viruses and fungi. The most common types of infections in SLE patients are respiratory, urinary, skin, and soft tissue infections.

**Case:** A 39-year-old woman came to the General Hospital HAM with complaints of decreased consciousness, denied trauma history. Also had a fever in 2 weeks. The patient also experienced shortness of breath that is not related to activity and weather. History of joint pain, hair loss experienced since 3 months ago. Laboratory examination at emergency room: hemoglobin level 5.9 g / dl, leukocytes 3,700 / µL, platelets 32,000 / µL, BUN 124 mg / dl, urea 295 mg / dl, creatinine 2.28 g / dl, ANA test: 1280, prothrombin time of patients: 30.3 (control: 13.20’), INR; 2.30. From the results of blood cultures, the bacteria Proteus mirabilis was found.

**Conclusions:** Based on history, physical examination and laboratory results of patients diagnosed with systemic lupus erythematous. Infections is a cause of mortality and morbidity in SLE. Proteus mirabilis is one of gram negative that can cause various bloodstream infections.

**Key words:** Lupus erythematous sistemik, Proteus mirabilis, Sepsis

**Correlation between leukocyte esterase and nitrite with urine culture in urinary tract infection (UTI)**

Ursula Nauli Malau, Purwanto Adipireno

1. PPDS Department of Clinical Pathology, Faculty of Medicine, Diponegoro University/ Dr. Kariadi Hospital Semarang
2. Department of Clinical Pathology, Faculty of Medicine, Diponegoro University/ Dr. Kariadi Hospital Semarang

**Background:** Urinary tract infection (UTI) is a condition where the urinary tract is infected by pathogens, causing microorganisms in urine. The gold standard examination for UTI is urine culture. Urine culture has some weaknesses. It takes around two days to get result and requires quite expensive cost. Leukocyte esterase and nitrite are relatively inexpensive, less-time consuming and easy to do laboratory tests that can detect UTI. The aim of this study was to explore the correlation of leukocyte esterase and nitrite with urine culture in UTI patients.

**Methods:** A cross sectional study of 42 UTI adult patients which
Correlation of CD64 leukocyte, immature granulocyte, and presepsin with procalcitonin in bacterial sepsis patients

Citra Novita1, Yetti Hernaningsih2, Anna Surgeon Veterini1
1 Clinical Pathology Specialization Program, Department of Clinical Pathology, Faculty of Medicine, Airlangga University-Dr. Soetomo Hospital, Surabaya, Indonesia
2 Department of Clinical Pathology, Faculty of Medicine, Airlangga University-Dr. Soetomo Hospital, Surabaya, Indonesia

Background: Sepsis is a critical emergency that causes morbidity and mortality worldwide. Latest sepsis diagnosis is by using qSOFa. CD64 is a surface antigen leukocyte that is deregulated during infection and sepsis. Percentage of immature granulocyte (IG) could rise in patients with infection and sepsis mainly on severe circumstances. Procalcitonin (PCT), a calcitonin prohormone, which is increased in sepsis and already known as a bacterial infection marker. Presepsin (CD14) is a glicoprotein that is known to increase in bacterial infection. The purpose of this research was to determine the correlation between CD64 leukocyte, IG and presepsin with PCT in bacterial sepsis patients.

Method: This cross-sectional study was performed during June-September 2018 in the Dr. Soetomo Hospital on 25 patients who met the qSOFa with positive bacterial blood cultures. All underwent examination of CD64 leukocyte by immunoflowcytometry, IG from BSE, presepsin and PCT by CLIA. Correlation between CD64 leukocytes, IG and presepsin with PCT was analyzed using Spearman corollation.

Results: The patients comprised 17 males(68%) and 8 females(32%), mean age 51.24±14.85 years. The mean±SD CD64 leukocyte was 6.95±2.13%, the median(min-max) IG, presepsin and PCT was 3.67(0.33-17.33%), 2,641(487-20,000)pg/mL and 5.96(0.39-181.5) ng/mL respectively. There was no correlation between CD64 leukocytes with PCT (p=0.281), but a meaningful correlation between IG and presepsin with PCT (p<0.0001) in bacterial sepsis patients.

Conclusions: Presepsin and IG can be used as a bacterial sepsis marker alternative supported by other examinations. CD64 leukocyte still need to be studied further before it is used as a bacterial sepsis marker.

Key words: CD64 leukocyte, immature granulocyte, presepsin, procalcitonin, bacterial sepsia

Description of faecal culture results in diarrhea patient due to antibiotic use

Suci Tresna1, IGAA Putri Sri Rejkis2, Puspa Wardhani2
1 Clinical Pathology Specialization Programme, Department of Clinical Pathology Faculty of Medicine Airlangga University-DR Soetomo Hospital Surabaya
2 Department of Clinical Pathology, Faculty of Medicine Airlangga University-Dr. Soetomo Hospital, Surabaya

Background: Diarrhea infection is common in developing countries and causes death for around 3 million people every year. Diarrhea is also the second leading cause of death in infants. Riskesdas in 2013 showed 30,775 cases of diarrhea. Bacterial infections can be caused by Salmonella, shigella, Vibrio, Entamoeba and Yersinia. Viral and fungal infections can also cause diarrhea. Diarrhea is a nosocomial infection that is common in hospitalized patients due to long-term use of antibiotics, usually caused by Clostridium difficile. This study was a follow-up study of diarrhea patients who received antibiotic therapy for more than 2 days with the results of negative C. difficile toxin, continued with faecal culture examination. The aim is to see the description of diarrhea caused other than by C. difficile in patients receiving long-term antibiotic therapy.

Methods: This research is experimental descriptive. Samples were taken from 30 diarrhea patients with 2 x 24 hours of antibiotic use, who were hospitalized in the ICU, Dr. Soetomo Hospital Surabaya from August 2017-May 2018. Samples with negative C. difficile toxin results are then followed by faecal culture examination using conventional methods.

Results: The results of culture examination were from 30 samples there were 3 samples with positive culture results of ESBL, 25 other samples showed negative culture results.

Conclusion: The results of faecal culture examination showed the cause of diarrhea in patients that receive antibiotic therapy is pathogenic E.coli (ESBL). The possibility of other causes that cannot be detected from the culture (viral or fungal) still require further research.

Key words: Faecal culture, bacterial infections, ESB

Description of the results of rapid molecular test (RMT) using xpert MTB/RIF at Dr. Wahidin Sudirohusodo Hospital Makassar

Faigha Aprilia Sy Faraid1, Irda Handayani2, Tenri Esa3
1 Medical Doctor Specialist Education Program of Clinical Pathology, Faculty of Medicine, Hasanuddin University / Dr. Wahidin Sudirohusodo Hospital, Makassar
2 Department of Clinical Pathology, Faculty of Medicine, Hasanuddin University / Dr. Wahidin Sudirohusodo Hospital, Makassar
3 Department of Clinical Pathology, Faculty of Medicine, Hasanuddin University / Dadi Hospital, Makassar

Background: Tuberculosis (TB) is a major health problem and the second leading cause of death in the world so that rapid detection methods for TB diagnosis and appropriate treatment are needed. Xpert MTB/RIF Rapid Molecular Test (RMT) is one of the detection method for TB which is expected to detect TB and anti-tuberculosis drug resistance (TB-DR) cases early. The purpose of this study is to find out the overview of result from Xpert MTB/RIF RMT for the period of September 2017 - August 2018 in Dr. Wahidin Sudirohusodo Hospital Makassar.

Methods: This study was the retrospective study of patients treated at Dr. Kariadi hospital Semarang in September 2018. Combur dipstick use colorimetry method and culture use conventional method. Correlation test used contingency coefficient.

Results: The correlation analysis showed there was a positive correlation between urine esterase leukocytes with urine culture (p = 0.044) and there was no correlation between urine nitrite with urine culture (p = 0.272).

Conclusion: There was a correlation between urine leukocyte esterase and urine culture and there was no correlation between the urine nitrite to urine culture. However further researches are needed to analyze factors that affecting the UTI diagnostic.

Keywords: Urinary tract infection, leukocyte esterase, nitrite, urine culture.
Methods: Retrospective cross sectional study with taking data from Xpert MTB/RIF RMT from September 2017 - August 2018. Statistical analysis using SPSS version 22 and Chi - Square statistical test (Significant if p < 0,05)

Result: An amount of 527 total samples, sputum got the highest percentage (96.8%) and found more in adult (96.8%). The results of Xpert MTB/RIF RMT “MTB not detected” found most in Non-HIV TB group (74.6%); “MTB detected, Rif sensitive” in TB-HIV group (42.2%, p = 0.002) and “MTB detected, Rif Resistance” in Non-HIV TB group (3.8%).

Conclusion and Suggestion: The results of Xpert MTB/RIF RMT in child and adult TB groups mostly found “MTB not detected” which was higher in Non-HIV TB group while “MTB detected, Rif sensitive” was higher in TB-HIV group. “MTB detected, Rif resistance” was mostly found in Non-HIV TB group. It is recommended for further research using the Xpert MTB RMT which is able to detect other anti-TB DR.

Key Words: Tuberculosis, Xpert MTB/RIF Rapid Molecular Test

A child with tuberculous spondylitis: Comprehensive clinical and laboratory diagnosis

Ciptaning Sari Dewi Kartika1, Riat El Khair2
1PPDS I of Clinical Pathology and Laboratory Medicine FK-KMK UGM/ Dr. Sardjito General Hospital Yogyakarta
2Department of Clinical Pathology and Laboratory Medicine FK-KMK UGM/Dr. Sardjito General Hospital Yogyakarta

Background: Tuberculosis remains a major health problem worldwide, especially in developing countries. Currently, tuberculous spondylitis is a clinical condition that rarely found but can lead to severe vertebral and neurological sequel which can be prevented by proper early diagnosis. We reporting a case with tuberculous spondylitis detected with GeneXpert MTB/RIF assay in a pediatric patient.

Case Description: A 4-year-3-month-old boy complaining for constipation that develops into urinary retention and lower limb weakness. Physical examination found that the patient suffer from fever and distended abdomen. Blood tests showed microcytic hypochromic anemia without any reticulocytes increased, but C-Reactive Protein (CRP). Urinalysis results is within normal limits. A 3-position abdominal x-ray showed a dilated colon and a portion of the small intestine system with a prominent fecal material. Lumbar MRI result indicate myelitis and spinal epidural abscesses, and also pyogenic spondylitis. Cerebrospinal fluid (CSF) analysis leads to bacterial infection, and CSF culture results in the growth of Mycobacterium tuberculosis with chronic inflammation results, negative Acid Fast Bacilli (AFB) smear staining, and also pyogenic spondylitis. Cerebrospinal fluid (CSF) analysis indicate myelitis and spinal epidural abscesses, and also pyogenic spondylitis.

Conclusion: Tuberculous spondylitis is a complex problem in children, and this case report shows the importance of history tracing and also clinical findings and proper diagnostic examination help to achieve an early diagnosis.

Keywords: tuberculous spondylitis, diagnosis, geneXpert MTB/RIF, children

Pattern of germs and antimicrobial sensitivity in bronkoalveolar lavage on ventilator associated pneumonia in the intensive care unit at rsup.H. Adam Malik Medan

Fikry D1, Loesnhari R2, Asty H1
1PPDS Clinical Pathology, Faculty of Medicine, University of North Sumatra, Medan.
2 Department of Clinical Pathology, Faculty of Medicine, University of North Sumatra, Medan.

Background: Ventilator-associated pneumonia (VAP) is defined as pneumonia which occurs 48 hours or more after a mechanical ventilator is given. VAP is a form of nosocomial infection that is most commonly found in intensive care units (ICU), especially in patients who use mechanical ventilators. VAP etiology including the profile of microorganisms and sensitivity patterns and their resistance to antimicrobial drugs are needed so that antibiotics can be given appropriately and directed to reduce mortality caused by ventilator associated pneumonia, it is necessary to identify germs and sensitivity tests. Based on this, the researchers wanted to do research on the detection of ventilator associated pneumonia-causing bacteria with bronkoalveolar lavage culture.

Methods: This research was carried out with cross sectional data collection methods, examined in the Division of Tropical Diseases and Infection of the Department of Clinical Pathology Sciences RSUP. H. Adam Malik Medan. The number of samples was 23 people who met the criteria and suspected VAP was carried out by bronkoalveolar lavage. The samples were culture and sensitivity test using Becton Dickinson Phoenix.

Result: The results of bronkoalveolar rinse culture taken by using flexible optical fiber bronchoscopy were found by bacteria which were the most Pseudomonas aeruginosa 21.8% (n = 5), Acinetobacter baumanii 17.30% and no growth of 17.30%. Antibiotic sensitivity test of bronkoalveolar lavage was sensitive to antibiotics was Piperacillin-Tazobactam 89.47% (n = 17), Amikacin 78.94% (n = 15) and Meropenem 52.63% (n = 10).

Conclusions: The most common bacteria were Pseudomonas aeruginosa 21.8% (n = 5) and the antibiotic sensitivity test of bronkoalveolar rash which was sensitive to antibiotics was Piperacillin-Tazobactam 89.47% (n = 17).

Keywords: VAP, Bronkoalveolar lavage, germs pattern, Sensitivity

Evaluation in decreasing number and type of hand bacterial colonization on the use of various type of antiseptic in Dr. Sardjito Hospital Yogyakarta

Primalia Sulistioiwati1, Andaru Daheshidewi2
1Resident of Clinical Pathology and Laboratory medicine FKKMK-UGM/ Dr. Sardjito Hospital Yogyakarta
2Departement of Clinical Pathology and laboratory Medicine FKKMK-UGM/ Dr. Sardjito Hospital Yogyakarta

Background: Hospital Acquired Infection- (HAIs) is a major problem for patient safety. One of the most important pathway of spreading infection in health facilities was through the hands of health care workers. Antiseptic handrub was one of the most effective way to reduce the number and types of the bacterias which are colonized in hands.

Methods: This was an experimental before-after analysis quasy study. The population of this study was health care workers who had direct contact with patients. Subject determination was based

on consecutive sampling; there was 90 opportunity hand hygiene for three types of antiseptic used: Sardjito hospital’s manufactured antiseptic (Alcuta), two types of fabricated antiseptic for handrub and handscrub. Number of bacterial count pre-post hand hygiene practices was tested and compared using ANOVA statistics for numerical and chi square test for categorical data

Result: Pre handrub bacterial count was ranged between 5,3x10^3 - 1,5x 10^7 CFU/cm^2 with Staphilococcus aureus growth was 4,4%; while post handrub bacterial count ranged from <10^2 - 10^6 CFU/cm^2 with null S. aureus growth. The average bacteria count number in three types of antiseptics ranged from 4.6 x10^3 - 7.4 x 10^5 CFU /cm^2; there were no significant differences between these groups (p > 0.05). Bacterial count after handrubbing with Alcuta was lower than the manufacturer’s hand rub and hand scrub (87.7 ± 78; 3712.6 ± 18276.4; 1070012.6 ± 3038047.2, p <0.005). Gram positive bacteria were more dominant than Gram negative, especially in group with count of bacteria post hand hygiene ≤ 4,6 x 10^4 CFU/cm^2 and Staphilococcus aureus colonization can be nullified by Alcuta.

Conclusion: All three antiseptic agents used in this study can reduce the average bacterial count and the colonization of Gram negative bacteria. It can also nullify the colonization of Staphilococcus aureus in the hands of health care workers.

Key words: antiseptic effectivity, bacterial count, colonization, hand hygiene, Staphilococcus aureus

Abcess scrotalis

Poltak Nababan 1, Ratna Akbari Ganie2

1 Resident Department of Clinical Pathology, Fakulty of Medicine, University of North Sumatera, Medan
2 Department of Clinical Pathology, Fakulty of Medicine, University of North Sumatera, Medan

Background: Abcess scrotalis is a progressive necrotizing fascitis in the penis, scrotum, and perineum. It is a fatal and rare infection. It causes high mortalities and is categorized an emergency in urology. The infection is polymicrobial, the combination of aerobic and anaerobic. The mainstream therapy includes hemodynamic stabilization, surgical debridement and intravenous broad-spectrum antibiotics.

Case: Male age 63 years came to the emergency room of H.Adam Malik General Hospital,Medan on December 29, 2017. The main complaints are ulcers on the scrotum, initially was itchy then ulcers appeared. Finally put out burst. The scrotum was swollen, reddish and painful. Necrosis on the tissues, foul-smelling gangrene, and fever were also detected. Pain was experienced for 2 weeks. The patient looked severely ill. The inferior palpebral conjunctiva was pale. Laboratory examination in ER: hemoglobin 10,5 g/dl, leucocyte 29.830 /ul, BUN 55 mg/dl, urea 118 mg/dl, creatinine 1.92 mg/dl, protein urinaylsis +1, sodium 117 mEq/dl, procalcitonin 30.95 ng/ml. In the pus culture were found negative gram of E.coli

Discussion: Abcess scrotalis is a progressively necrotizing fascitis in the penis, scrotum, and perineum, occurring at the age of 40-70 years. Male/female ratio is 10:1. Polymicrobial infections of the colorectal and genital areas are the main sources of infection, caused by dominant aerobic E.coli and dominant anaerobic bactericides. However, other source such as inability to maintain genital/colorectal hygiene is also part of the risk factors. Genital/ colorectal pain symptom, inflammation, skin/soft tissue necrosis, rapidly develop into large gangrene, causing sepsis.

Conclusion: Based on anamnesis, clinical examination and laboratory results, the patient was diagnosed to suffer from Abcess scrotalis.

Keywords: Abcess scrotalis, necrotizing fascitis, sepsis

A meta analysis of mortality in dengue infected patients who develop acute renal failure

Dian Rizki Fitria1, Yanuar Rahmat Fauzi2

1 Kasih Ibu General Hospital, Denpasar, Indonesia
2 Interdisciplinary Graduate Medicine University of Miyazaki, Miyazaki-shi, Japan

Background: Dengue is the most prevalent mosquito-borne viral infection in the world (Guzman and Kaori, 2001). Fatality rate and causes of fatality in dengue-affected patients greatly varied from one report to another (Lee et al., 2012). Despite that Acute Renal Failure have become one of the fatality predictors in dengue infection patients (Hsieh et al., 2016), there is not a meta analysis study about this topic.

Methods: This meta analysis was conducted on 3365 patients data from 17 studies, that was done based on PRISMA Statements guidelines.

Results: I^2 = 72% (> 50%) and chi square p< 0.01(P<0.05), indicates the level of heterogeneity is high, so random effect model of meta-analysis was used. The funnel plot show a symmetric plot, indicates that there is not detected possible bias in the trials that were identified and included. The diamond shape that symbolize total overall effect/ pooled risk does not touch the line of no effect and the p value < 0.00001, indicates there is a significant difference between two groups, statistically. All effect estimates from the single studies and the pooled result estimates are located to the left, indicates mortality occurred more frequently in the group of patients with dengue infection who develop acute renal failure (ARF) than in the group of patients with dengue infection who do not develop ARF.

Conclusion: This study provides evidence that the development of acute renal failure during dengue infection, increased the risk of mortality. Thus, it is important to detect the early sign and make a special consideration when choosing treatment and clinical decision to improve the outcome quality.

Keywords: Meta analysis, Mortality, Dengue, Acute Renal Failure

Reference value of urinary erythrocyte and leucocyte count Using automated urine analyzer cobas 6500

Ida Ayu Wayan Mahayani1, Diana Aulia2

1 Medical Resident of Clinical Pathology Department, Faculty of Medicine University of Indonesia, Dr. Cipto Mangunkusumo Hospital, Jakarta
2 Clinical Pathology Department, Faculty of Medicine University of Indonesia, Dr. Cipto Mangunkusumo Hospital, Jakarta

Background: Urinalysis orders especially in medical checkup setting demand laboratories to provide accurate and quick results. Automated urinalysis analyzers are currently available, one of which is Cobas 6500. Reference value for urine particles should be adjusted with local population. The objectives of this study were to determine the precision of urine particle examination and
Reference value of urinary erythrocyte and leucocyte count using automated urine analyzer Cobas 6500.

**Materials and Methods:** We used 120 adult male’s urine specimens and 120 adult female’s urine specimens which were checked during medical checkup and had normal complete blood count, liver and kidney function test, dan urinalysis at Dr. Cipto Mangunkusumo hospital. Amount 2 mL uncentrifuged urine was added to Cobas 6500, it’s centrifuged automatically by the machine, the suspension was evaluated by automatic microscope, finally the characteristics were interpreted by a special software.

**Results:** The coefficient of variant (CV) of within-run precision test was 9.7% for erythrocyte and 8.4% for leucocyte. The CV of between-day precision test was 14.9% for erythrocyte and 13.1% for leucocyte. Reference value of urine particles are the same for both male and female, 0-1 cells/HPF (0-4.4 cells/µL) for erythrocyte and 0-2 cell/HPF (0-8.8 cells/µL) for leucocyte.

**Conclusions:** Lower reference value may be caused by different population characteristics. Precision test results were almost similar with other previous studies, although the CV recommendation for urinary erythrocyte and leucocyte count which were examined by automated urine analyzers was not yet established.

**Keywords:** Automated urinalysis analyzer, precision test, reference value.

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Reference value of neonatal glucose-6-phosphate dehydrogenase (G6PD) using blood collected on filter paper

Firensca Pattiasina1, Ina S Timan1, Rinawati Rohsiswatmo2
1Clinical Pathology Department, Faculty of Medicine, University of Indonesia / RSUPN Cipto Mangunkusumo, Jakarta
2Pediatric Department, Faculty of Medicine, University of Indonesia / RSUPN Cipto Mangunkusumo, Jakarta

**Background:** Glucose-6-Phosphate Dehydrogenase (G6PD) is an intracellular enzyme that protects hemoglobin from oxidative damage. There are various examination methods that can be used in conducting G6PD value but reference value of the G6PD in neonates using the Fluorometric method at RSCM is unavailable. This study aims to determine the reference value of G6PD activity in neonates with Fluorometric method.

**Methods:** Determination of the G6PD activity reference value in neonates, 120 male neonates and 120 female neonates who met the inclusion criteria were obtained. The sample came from the remnant blood sample on the filter paper for neonatal TSH examination in the RSCM laboratory. G6PD activity checks were performed with Thermo-Scientific-Fluorometer and Ani Lab Systems Neonatal G6PD Deficiency Screening Assay reagent.

**Results:** G6PD is one of the enzymes in erythrocytes that play role ensuring the erythrocytes function well. In this study, the G6PD activity reference value in neonates was 4.5-12.8 IU/gHb. There is difference in the value of referrals when compared to previous studies, due to different methods and research populations.

**Conclusion:** Reference value G6PD activity in neonate using fluorometric method is 4.5-12.8 IU/gHb. The G6PD reference value must be adjusted to the available inspection methods.

**Keywords:** G6PD activity, reference value, fluorometric

Comparison of HbA1c measurement methods between automatic boronate affinity point of care testing and high performance liquid chromatography

Ricky Tjahjadi1, Astuti Giantini2
1 Clinical Pathology Resident, Faculty of Medicine, Universitas Indonesia, Cipto Mangunkusumo National Hospital
2 Staff of Clinical Pathology Department, Cipto Mangunkusumo National Hospital

**Background:** This study aimed to assess the agreement between two HbA1c analyzers, Alere Afinion AS100, a boronate affinity based POCT, and HPLC based analyzer Bio-Rad Variant II Turbo HbA1c kit-2.0 as reference method.

**Methods:** This study involved 120 samples of peripheral K_EDTA whole blood sent to Clinical Pathology Laboratory of Cipto Mangunkusumo National Hospital for HbA1c measurement. Based on reference method, 40 samples with HbA1c ≤ 6.4%, 40 samples with HbA1c > 6.4%, and 40 samples with variant hemoglobin or hemoglobinopathy were included. Precision and accuracy of both analyzers were assessed using control materials. Agreement between methods were assessed by Bland-Altman plot and Passing-Bablok regression test. Results were compared to NGSP recommendations.

**Results:** Reference method had TE ranging from 3.1% to 4.9%, while Afinion ranged from 2.16% to 3.24%. Both methods correlated well with Passing-Bablok regression showing no proportional or systematic differences. Linearity between tests was proven by Cusum test value of p > 0.05. Bland-Altman plot yielded 91.74% agreement. No significant differences were observed in hemoglobinopathy and variant hemoglobin analysis of HbA1c.

**Conclusion:** Afinion was precise, accurate, and linear to HPLC reference method. Both methods exhibited no systematic or proportional differences. Despite Bland-Altman plot of less than 95% agreement, no clinically significant result was found based on NGSP criteria.

**Keywords:** Comparison; HbA1c; boronate affinity; HPLC; Afinion; Variant II Turbo; POCT.

Cardiorenal Syndrome in Chronic Heart Failure Patient with Severe Arrhythmia

Melissa1, Jansen Chitrhadinata1, Debora Nurhadi2
1 Sumber Waras Hospital, DKI Jakarta
2 Laboratory Department of Sumber Waras Hospital, DKI Jakarta

**Background:** The maintenance of body’s hemodynamic stability depends on the heart performance and renal function. Both organs’ work are interconnected that the damage of the heart lead to the dysfunction of renal and vice versa. Nowadays, there are many cases when heart disease lead to renal dysfunction, or renal damage induce to heart failure. Cardiorenal syndrome, the term used for the condition, has caused significant increase in both mortality and morbidity, complexity of the treatment, and expensive cost of care.

**Case Description:** A 54 year old male with history of Chronic Heart Failure, presented with difficulty of breathing and epigastric pain. His ECG showed severe arrhythmia of ventricular tachycardia. He was observed in Intensive Care after being treated with synchronized cardioversion. His blood test’s result showed a high level of BNP (2.610 pg/mL) with an increased creatinine level (2.1
mg/dL). After being treated with heparin, continuous intravenous furosemide and isorbid for nine days, his creatinine level became normal again (1.1 mg/dL).

Conclusion: In both heart failure and severe arrhythmias, acute lowering of cardiac output lead to hemodynamic instability and renal injury. With adequate treatment in early stage, the impairment of the renal could be avoided. Thus, it is important to recognize and aware of the possibility of kidney injury in heart failure.

Keywords: cardiorenal syndrome, heart failure, kidney injury, biomarkers, severe arrhythmias.

Blood pressure relationship with the results of urine protein examination in fishermen of Batu Karas Village, Cijulang, Pangandaran, West Java

Tri Ariguntar1, Tri Wahyuni2, Diding Kusumawadi3
1Faculty of Medicine and Health, Jakarta Muhammadiyah University/ FKK UMJ

Background: Hypertension is an increase of persistent blood pressure with systolic 140 mmHg and diastolic ≥90 mmHg (Joint National Committee/JNC VII). According to the World Health Organization, 40% of the adult population in the world are suffered from hypertension. In Indonesia, hypertension ranks the 6th largest non-infectious disease with prevalence of 25.8%. Uncontrolled hypertension results in target organ damage, which can cause strokes, heart attacks, retinopathy, or kidney disorders. Kidney abnormalities as a result of hypertension are caused by an increase in renal functional activity associated with cardiac output. The discovery of protein in urine can be a marker of the abnormality.

Methods: Cross-sectional research method with descriptive-analytic approach. A total sampling of 97 Batu Karas fishermen, who examined blood pressure and urine dipstick at the FKK UMJ social service in August 2016. Analysis of the data were using Gamma test.

Results: In the group of fishermen with normal blood pressure, 29 were urine proteins 1+, two were 2+, and 11 were negative. The group of pre-hypertensive, 27 were 1+ and 15 were negative. The group of first degree hypertension, three were 1+ and four were negative. Second degree hypertension, three were 1+ and three were negative.

Conclusion: A significant correlation between blood pressure and urine protein examination results in Batu Karas fishermen’s, with p value equal to 0.048.

Keywords: hypertension, kidney, dipstick

Clinical biochemical marker analysis in obese women with non-alcoholic fatty liver disease

Dewi Susopita1, Siti Muchayat2
1Postgraduate Program in Clinical Pathology Specialization, Faculty of Medicine, Public Health and Nursery Universitas Gadjah Mada, Yogyakarta
2Clinical Laboratory Installlation, Dr. Sardjito General Hospital/ Department of Clinical Pathology and Laboratory Medicine, Faculty of Medicine, Universitas Gadjah Mada, Yogyakarta

Background: Non-alcoholic fatty liver disease (NAFLD) is one of the most common causes of chronic liver disease. This condition is associated with lipid deposits in hepatocytes, characterized by damage, inflammation and liver fibrosis, as evidenced in patients with severe obesity 40% with fibrosis. Fatty liver confirmation in obese women is done using a single biochemical marker or panel. The purpose of this study was to identify and determine clinical biochemical markers related to fatty liver.

Methods: An observational study with a cross-sectional design involved 42 obese women, aged ≥17 years, from January to June 2018. Examination of cholesterol, triglycerides, HDL, LDL, ALT, AST, Free fatty acids (FFA) and adiponectin was carried out. Confirmation of fatty liver using ultrasound. Statistical analysis used: 2-tailed t test (significance of Levene’s test) followed by multivariate analysis with Backward stepwise (Wald) test.

Results and Discussion: The comparison of levels of ALT, AST, and FFA biochemical markers was higher in the fatty liver group, but lower in adiponectin markers. Increased FFA levels indicate a greater chance of fatty liver in obese women by 1,259 times, while decreasing adiponectin by 0.412 times.

Conclusion: Obese women are generally at risk for fatty liver conditions and proper prevention and therapy are needed. In this study, there was an increased chance of fatty liver occurrence in some biochemical markers (FFA, Adiponectin), but further prospective large-scale research is still needed.

Keywords: Non-alcoholic fatty liver disease, lipids, transaminases, free fatty acids, adiponectin, obese women

Hepcidin level in patients undergoing 1st-time vs regular haemodialysis

Erma Wahyuni1, Sari Hutagaol1, Harun Rasyid Lubis2, Lukman Hakim Zein3, Adikoesoema Aman4, Stephen CL Koh3, Herman Hariman4
1Department of Biomedics, School of Medicine, University of North Sumatera, Medan Indonesia
2Division Nephrology, Department of Internal Medicine, School of Medicine, University of North Sumatera/Haj Adam Malik Hospital and Rasida Hemodialysis Clinic, Medan, Indonesia
3Division of Hepato-gastroenterology, Department of Internal Medicine, School of Medicine, University of North Sumatera/Haj Adam Malik Hospital, Medan Indonesia
4Division of Haematology, Department of Clinical Pathology, School of Medicine, University of North Sumatera/Haj Adam Malik Hospital, Medan, Indonesia
5Visiting Consultant, Department of Clinical Pathology, School of Medicine, University of North Sumatera/Haj Adam Malik Hospital, Medan, Indonesia

Background: Hepcidin is a master controller of iron metabolism, however it is not clear its effect on haemodialysis, especially during 1st-time and regular hemodialysis. Therefore, this study was aimed to investigate the level of hepcidin on both types of hemodialysis.

Method: 36 patients were recruited. 11 patients were from 1st-time while 19 from regular hemodialysis. The hepcidin was assaid using ELISA method. No erithropoetin was given in 1st-time 19 from regular hemodialysis while 19 patients from regular hemodialysis were treated with heparin, continuous intravenous furosemide and isorbid for nine days, his creatinine level became normal again (1.1 mg/dL). After being treated with heparin, continuous intravenous furosemide and isorbid for nine days, his creatinine level became normal again (1.1 mg/dL).

Conclusion: In both heart failure and severe arrhythmias, acute lowering of cardiac output lead to hemodynamic instability and renal injury. With adequate treatment in early stage, the impairment of the renal could be avoided. Thus, it is important to recognize and aware of the possibility of kidney injury in heart failure.

Keywords: cardiorenal syndrome, heart failure, kidney injury, biomarkers, severe arrhythmias.
Cigarette and type 2 diabetes
Among javanese indonesian smokers

Christine Patramurti1, Fenty2
1Pharmaceutical Chemistry Departement , Faculty of Pharmacy, Sanata Dharma University
2Pharmacology Departement , Faculty of Pharmacy, Sanata Dharma University

Background: Nicotine, the active compound in cigarettes, can cause impaired glucose metabolism through increasing insulin resistance as well as decrease insulin secretion in B cell pancreas. This condition can increase the risk of type 2 diabetes in human. This study aims to evaluate the effect of smoking behavior, determined by Cigarette per Day (CPD) and smoking duration, to glycohemoglobin (HbA1c) levels in Javanese Indonesian smokers.

Methods: The 30 smokers were studied consisting of 7 smokers with CPD <10, 19 smokers with CPD 11-20 <10 and 4 smokers with CPD 21-30. They have been smoking more than 10 years. The whole blood sample were used for examination of HbA1c levels.

Results: The results showed that CPD and smoking duration were significantly influenced HbA1c, where F count> F table (370,541> 3,354) with significance <0,05 (2,35,10-20 <0,05) and the multiple correlation coefficient (R) of 0.982.

Conclusion: The interaction between the quantity of cigarettes smoked and smoking duration will increase the risk of T2D observed by HbA1c among Javanese Indonesian Smokers. Smoking was considered as an independent risk factor for diabetes and might have principal public health consequences for tobacco control and diabetes prevention.

Keyword: Cigarette, Smoking, Glycohemoglobin

Risk of Cardiovascular Disease Based on Framingham Score in Adult with Central Obesity in rural areas of Yogyakarta

Fenty1 2, Putu Dyana Chrisstasani 1, Yunita Linawati1, Aris Widayati1
1 Faculty of Pharmacy, Sanata Dharma University, Yogyakarta
2Bethesda Hospital, Yogyakarta

Correspondence email: fenty@usd.ac.id

Introduction: General and central obesity prevalence tends to increase in developing countries. This prevalence of obesity also increases in rural areas in Indonesia. It correlates with an increase in cardiovascular risk. The Framingham Risk Score (FRS) was used to estimate the 10-year cardiovascular risk of an individual. The aim of the study was to determine differences in risk of cardiovascular disease based on Framingham scores in central obese adults and without central obesity.

Method: this study used observational analytic method with cross-sectional design. The research subjects were rural people in Bonjoroyo village, Kulonprogo Regency, DIY who met the inclusion criteria. The data obtained were obesity index (Body Mass Index / BMI, waist circumference, waist circumference ratio, fasting blood glucose levels, and BMI-based FRS, which were then statistically analyzed by normality test and continued with Mann-Whitney test with levels 95% confidence.

Results: There were 122 subjects (43 males and 79 females), aged 30-73 years. This study showed there were 56% low risk, 26% moderate risk and 18% high risk in 10 years of predicted CVD risk in rural adults. The results showed that there were differences in the Framingham score in the central obesity group in both the male and female groups but not statistically significant (p> 0.05).

Conclusion: This study showed that individuals with central obesity had a greater Framingham score than those without central obesity, although it was not statistically significant, but clinically significant.

Keywords: Framingham Risk Score, Central Obesity, Rural

Waist-to HIP ratio and body mass index are associated with total cholesterol levels in adults

Larasati S*, Alvina**
*Program Studi Sarjana Kedokteran FK Trisakti
**Bagian Patologi Klinik FK Trisakti

Background: Hypercholesterolaemia is defined as a state of elevated cholesterol levels in the blood beyond the normal...
range that increases the risk of cardiovascular disease and stroke. Obesity especially abdominal obesity is associated with hypercholesterolemia. Body mass index (BMI) is an anthropometric measurement to estimate obesity prevalence in a population. BMI shows significant relationship with increases the risk of cardiovascular disease but this measurement is not to evaluate varians body lipid distribution and abdominal lipid mass. Abdominal obesity measured by waist-to-hip ratio. The objective of this study is to understand the relationship between waist-to-hip ratio, (BMI) and total blood cholesterol levels.

**Method:** This research is an analytical study with cross-sectional design with respondents as many as 60 adults subject. Data was collected using NESCO cholesterol strip test for total cholesterol, measure height and weight body for BMI and using tape for measure waist to hip ratio. Data were analyzed using Chi-Square and Kolmogorov-Smirnov test.

**Results:** The majority of respondents (55%) were aged >35 years old. There were 38,3% of respondents with increased waist-to-hip ratio and 28,3% with elevated blood cholesterol levels. 66,7% of respondents were normal BMI and 11,7% with obesity. Chi-Square test shows that there is a relationship between waist-to-hip ratio and total cholesterol levels (p<0,001). Kolmogorov-Smirnov test shows that there is relationship between body mass index and total cholesterol levels (p<0,032)

**Conclusion:** There is a significant relationship between waist-to-hip ratio, BMI and total blood cholesterol levels in adults.

**Keywords:** Total Cholesterol, Waist-to-Hip Ratio, BMI, obesity

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**Comparison of IE-HPLC and capillary electrophoresis (CE) for HBA1C measurement**

Catur Suci S1, Edwin Darmawan2, Anik Widijanti3
1Subspecialistic Resident of Clinical Pathology, Faculty of Medicine Airlangga University, Surabaya
2Subspecialistic Resident of Clinical Pathology Faculty of Medicine Brawijaya University, Malang
3Staff of Clinical Pathology Faculty of Medicine Brawijaya University/ RSUD dr. Saiful Anwar

**Background:** HbA1c examination method is divided into 2 categories. The first method is based on the molecular charge such as HPLC and capillary electrophoresis (CE). The second method is based on molecular structure such as immunoonasay, boronate affinity chromatography and enzymatic reactions. Each method has its own advantages and disadvantages, thus HbA1c examination method must be carefully selected. In our study to compare HbA1C analysis with HPLC and CE method.

**Methods:** HbA1c analysis was performed in parallel by HPLC and CE methods for 110 patient samples which have average glucose during 3 months. A comparative in this study include correlation with average glucose 3 months, precision, method comparison and interference including Hb variant (A2 and HbE) in central laboratory of dr. Saiful Anwar hospital during Maret-August 2018. Correlation analysis was performed with Pearson and method comparison with Bland Altman Plot and Passing-bablok regression analysis.

**Results:** Good correlation at both method for eAGHbA1c and average glucose 3 months. CV intrarun in normal level (A1c ±5%) HPLC Vs CE was 1,7% Vs 0.63% and high level (A1c ±11%) was 0,59% Vs 0,61%, CV between run HPLC Vs CE was 2,47% Vs 2,17% that acceptable target of precision NGSP less than 3%. Method comparison showed good correlation both method. The comparation HbA1C in group without Hb Variant of CE method slightly lower than HPLC but in Hb variant group, CE method slightly higher than HPLC, but it is insignificant for Hba1c interpretation.

**Conclusion:** HbA1c measured in HPLC and CE method are comparable and there is no significant difference in the results obtained.

**Keywords:** HbA1c, high-performance liquid chromatography (HPLC), capillary Electrophoresis (CE).

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**The correlation of hepatitis B viral (HBV) load with hepatitis B panel and the liver function test in chronic HBV patients in dr Moewardi Surakarta Hospital**

Elvira Dwijayanti1, Amiroh Kurnliati2
1 Resident of Clinical Pathology, Faculty of Medicine, Sebelas Maret University of Surakarta;
2 Education staff of Clinical Pathology, Faculty of Medicine, Sebelas Maret University of Surakarta/ Dr. Moewardi Public Hospital of Surakarta

**Background:** Chronic hepatitis B is defined as HBsAg positive for more than six months. Monitoring hepatitis B virus infection with HBV DNA viral load requires substantial costs. Thus alternative markers are needed. Our study aimed to determine the relation between DNA viral HBV viral load and liver function panel as well as panel hepatitis B in patients with chronic hepatitis.

**Methods:** This retrospective analytical study was conducted in 218 chronic hepatitis B patients underwent viral load of hepatitis B, HBsAg, HBeAg, AST and ALT examinations. The data were obtained from the Laboratory of Information Systems (LIS) of the clinical pathology laboratory of Dr. Moewardi hospital. The data were analyzed with the spearman coefficient test, p <0.05 was considered significance.

**Results:** Hepatitis B DNA viral load was significantly correlated with AST, ALT, and HBeAg serostatus with p <0.001; r = 0.404, p <0.001; r = 0.402, p <0.001; r = 0.331, respectively. HBeAg, AST and ALT can be alternative parameters for monitoring chronic hepatitis B, especially in the lack of HBV viral load test.

**Keywords:** chronic hepatitis B, viral load, HBeAg, AST, ALT.

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**Acute kidney injury (aki) as a mortality predictor In sepsis patients**

Kenny Mayavani1, Dian Ariningrum2
1Clinical Pathology Residence, Faculty of Medicine, Sebelas Maret University/ Clinical Laboratory Instalation, dr. Moewardi Public Hospital, Surakarta
2Department of Clinical Pathology and Laboratory Medicine, Faculty of Medicine, Sebelas Maret University and Clinical Laboratory Instalation, dr. Moewardi Public Hospital, Surakarta

**Background:** Sepsis is a dysregulation of the body’s response to infection, resulting in life-threatening organ failure. Sepsis leads to kidney disorders in the form of AKI. Acute Kidney Injury is strongly associated with sepsis mortality. Its mechanism can be through several pathways like ischemia, direct inflammation, dysfunctions of coagulation and endothelial, and apoptosis. This study aimed to determine AKI as a predictor of mortality in sepsis.

**Methods:** A retrospective cohort study was carried out at dr.
Moewardi hospital from January to December 2017. A total of 79 subjects of septic patients were divided into AKI and non AKI with the outcomes of survived and non survived patients. Chi square test was used to analyze the significant difference of mortality risk between AKI and Non AKI. The data were analyzed with 2x2 cross-tabulation with relative risk (RR), p < 0.05 was considered significant.

**Results:** There were 45 (56.96%) AKI and 34 (43.04%) non AKI. The mortality occurred in AKI and non AKI were 39 (86.7%) and 22 (64.7%) respectively. Acute kidney injury was associated with mortality risk in septic patients (p = 0.042; RR 1.339; 95% Confidence interval (CI) 1.010-1.765).

**Conclusion:** In septic patients AKI can be considered as a mortality predictor, with the risk is 1,339 times higher than non AKI.

**Keywords:** Sepsis, AKI, mortality

### Diagnostic test of apri, FIB-4 and guci as predictor of liver fibrosis in patient with chronic hepatitis B

**Novida Dwi Astuti¹, Yuwono Hadisuparto²**

¹Clinical Pathology Residence, Medical Faculty of Sebelas Maret University/ Dr.Moewardi General Hospital, Surakarta

²Clinical Pathology Instalaltion, Medical Faculty of Sebelas Maret University/ Dr.Moewardi General Hospital, Surakarta

**Background:** Chronis Hepatitis B (CHB) is endemic in Indonesia which progression to liver cirrhosis, begins liver fibrosis, due to excess accumulation of extracellular matrix protein, reversible wound healing responses. Prevention of disease progression is the main goal of CHB management. Liver biopsy is the gold standard to determine the fibrosis stage. Many studies have developed noninvasive methods as surrogates of liver biopsy, including by measuring liver stiffness by FibroScan, but is expensive. AST to platelet ratio index (APRI), fibrosis-4 index (FIB-4) and Göteborg University Cirrhosis Index (GUCI) are other noninvasive markers of liver fibrosis. The aim of this study was to evaluate the performance of these fibrosis markers as predictors of liver fibrosis in CHB.

**Methods:** This crosssectional study obtained 128 CHB patients in the subdivision of hepatology, Dr.Moewardi General Hospital, Surakarta from January to September 2017. Based on the results of FibroScan, patients were grouped into no-minimal fibrosis group (<F2) and significant fibrosis (≥F2), then compared the performance of Fib-4, APRI and GUCI. Data analyses were performed by SPSS 18.0.

**Results:** As significant predictor of fibrosis, Fib-4 with sensitivity (Se) 87.2%, specificity (Sp) 79.4%, NDP 92.1% and NDN 69.2%. APRI with Se 80.9%, Sp 76.5%, NDP 90.5% and NDN 59.1%. GUCI with Se 80.9%, Sp 85.3%, NDP 93.8% and NDN 61.7%. AUC value of FIB-4 was higher than APRI and GUCI, 0.879, 0.851 and 0.874, respectively.

**Conclusion:** Fib-4 as a better predictor of liver fibrosis than APRI and GUCI in CHB.

**Keywords:** Fib-4, APRI, GUCI, FibroScan, Chronis Hepatitis B

### INTERFERENCE OF LIPEMIC SAMPLE IN INFANT WITH LIPEMIA RETINALIS CAUSED BY PRIMARY MIXED HYPERLIPIDEMIA - A CASE REPORT

Andi Munawirah ¹, Habibah S. Muhiddin ², Liong Boy Kurniawan ³, Ruland DN Pakasi ¹

¹Medical Doctor Specialist Education Programme of Clinical Pathology, Faculty of Medicine, Hasanuddin University/Dr. Wahidin Sudirohusodo Hospital Makassar

²Department of Ophthalmology, Faculty of Medicine, Hasanuddin University/Wahidin Sudirohusodo Hospital, Makassar

³Department of Clinical Pathology, Faculty of Medicine, Hasanuddin University/ Wahidin Sudirohusodo Hospital, Makassar

**Background:** Interference is a condition of which sample components cause an error in the analyte measurement in the analyzer. The most common cause of interference is lipemic sample. Lipemic sample is characterized by turbidity of the serum or plasma caused by an accumulation of lipoprotein particles. Primary mixed hyperlipidemia (PMH) is a cause of primary hypertriglycerideremia with lipemia manifestation.

**Case report:** A three month-old baby boy was admitted to a hospital, having white spots in his black eyes. The spots were seen clearer at light exposure, and ophthalmologic examination indicated lipemia retinalis. Patient’s sample was lipemic and its laboratory analysis resulted in as follow: WBC 13.10³/μL, Hb 15.6 g/dL, RBC 2.99 10⁶/μL, Triglycerida 10.435 mg/dL, Total Cholesterol 631 mg/dL, HDL 12 mg/dL, LDL 195 mg/dL, and Apoprotein B 196 mg/dL. Due to a significant interference, however, SGOT, SGPT, Ureum and Creatinin were not obtained. Immunologic serum analysis of the patient and his mother showed an increasing of antibody IgG CMV: 28 dan 20 IU/ml, respectively.

**Conclusion:** Lipemic samples could directly affect most of laboratory examination methods. Laboratory results with such lipemia interferences should be interpreted critically and accurately to produce precise diagnosis, and in turn, monitoring of patient with lipemia.

**Keywords:** Interference, Lipemic Sample, Lipemia Retinalis, Primary Mixed Hyperlipidemia.

### Selection of bromcresol green and bromcresol purple examination methods in determining the limit of indications for infusion of albumin

Margaretha Indriani Kosim¹, Nina Tristina¹, Basti Andriyoko²

¹Clinical Pathology Resident, Faculty of Medicine Universitas Padjadjaran;

²Clinical Pathologist, Faculty of Medicine Universitas Padjadjaran

**Abstract:** Introduction: Human albumin consists of 96% albumin and 4% globulin, used to increase circulation volume in hypoalbuminemia. One indication of human albumin infusion based on serum albumin levels. Methods of checking serum albumin levels that are often used are bromcresol green (BCG) and bromcresol purple (BCP) methods. The BCP method is more specific than BCG method, because BCP only binds albumin while BCG binds albumin and globulin. The purpose of this study was to determine the cause of the increase in the use of albumin infusion and its relationship to changes in examination methods.

**Method:** This research was conducted at the Department of Clinical Patholog, Dr. Hasan Sadikin. The study design was descriptive
observational with retrospective design, using pharmaceutical data, medical record data, laboratory information system for the period July-September 2016 and the July-September 2017. Results: Infusion Albumin administration in 2016 with serum albumin levels <2 g/dl using bromcresol green method in July was 19 patients (35%), in August was 15 patients (36%), in September was 44 patient (38%). Giving albumin infusion in 2017 with serum albumin levels <2 g/dl using bromcresol purple method in July was 77 patients (52.3%), in August was 104 patients (64.20%), in September was 119 patient (66.11%).

Conclusion: The bromcresol purple method is more specific for checking serum albumin levels compared to the bromcresol green method in patients with hypalbuminemia. The clinician’s compliance with albumin infusion based on albumin levels affects albumin infusion in patients with serum albumin levels <2 g / dl. Keywords: albumin, bromcresol green, bromcresol purple.

Prediction of acute coronary syndrome outcome using creatinin serum analysis

Rizki Dumpatna¹, Nida Suraya², Adhi Kristianto Sugianil³
¹PPDS Clinical Pathology, Medical Faculty of Padjadjaran University, Bandung;
²Clinical Pathology Department, Medical Faculty of Padjadjaran University *rizkidumpatna.2308@gmail.com

Abstract: Introduction: Acute kidney injury (AKI) was commonly found as complication in patients with acute coronary syndrome (ACS) and could worsen their prognosis. The aim of this study was to evaluate the association of serum creatinine as a predictor of short-term mortality in ACS patients in hospitals.

Method: The study population included patients diagnosed with ACS based on clinical presentation, electrocardiography, and / or markers of heart serum with retrospective data collection at Dr. Hasan Sadikin Bandung for the period July - December 2017. Acute coronary syndrome output was categorized as death within 48 hours, more than 48 hours and clinical improvement. Mortality within the first 48 hours and more than 48 hours were documented as patient output. Serum creatinine, ureum, and estimated glomerular filtration rate (eGFR) values were observed and analyzed using either parametric tests (post-hoc ANOVA tests) or non-parametric tests (Kruskal Wallis test).

Result: In this study, 74 subjects were diagnosed as SKA. Two subjects were excluded due to incomplete data. From these 72 subjects with ACS, elevated serum creatinine levels were observed in the group of subjects who died within 48 hours (creatinine mean 1.75 mg / dl, p = 0.049), and more than 48 hours (creatinine mean 1.34 mg / dl, p = 0.016 ) compared to groups with subjects with improvement.

Conclusion: Serum creatinine might have prognostic value in predicting short-term mortality in ACS patients.

Keywords: acute coronary syndrome, acute kidney injury, creatinin serum.

Mortality risk in burn patients based on serum albumin level within the first 24 hours hospitalization

Ummi Muthiah¹, Tiene Rostini², Nina Tristina²
¹Clinical Pathology Resident, Faculty of Medicine, Padjadjaran University.
²Clinical Pathology Department, Faculty of Medicine, Padjadjaran University, Dr. Hasan Sadikin General Hospital, Bandung.

Background: A decrease in serum albumin levels can be used to predict mortality risk in burn patients. The aim of this study was to determine the mortality risk in burn patients based on serum albumin level within the first 24 hours hospitalization.

Methods: This was a case control, retrospective study. The subjects were burn patients who were hospitalized at Dr. Hasan Sadikin General Hospital during January-December 2017. The subjects were divided into two groups, i.e. the group of dead subjects and the group of survived subjects at the end of hospitalization. The subjects were then differentiated based on serum albumin level within the first 24 hours hospitalization.

Results: The subjects were 47, consisted of 9 dead subjects and 38 survived subjects. The odds ratio (OR) of serum albumin level <2 g/ dl to mortality was 14.40 (p=0.009; CI:2.1-100).

Conclusion: Subjects with serum albumin level <2g/dl within the first 24 hours of hospitalization have a 14 times higher mortality risk than subjects with serum albumin level ≥2 g/ dl. Therefore burn patient need to be examined serum albumin level within the first 24 hours of hospitalization.

Keywords: burn, mortality risk, serum albumin level.

Serum amylase analysis of pre and post endoscopic cholangiopancreatography in pancreatic cancer

Nunung Meisari Indah Umar¹, Nurahmi², Ruland DN Pakasi³
¹Medical Doctor Specialist Education Program of Clinical Pathology, Faculty of Medicine, Hasanuddin University/Dr. WahidinSudirohusodo Hospital, Makassar
²Department of Clinical Pathology, Faculty of Medicine, Hasanuddin University / at Makassar Hospital
³Department of Clinical Pathology, Faculty of Medicine, Hasanuddin University / at Stella Maris Hospital Makassar

Introduction: Pancreatic cancer is a cancer of the thirteenth sequence of events worldwide and the fourth most common cause of death by some cancers. Amylase levels can increase if there is damage to pancreatic cells. Therapeutic ERCP procedure is expected to reduce amylase levels that are elevated in pancreatic cancer. The aim of this study was to evaluate the pre and post ERCP serum amylase in pancreatic cancer patients.

Method: Observational retrospective using data from pancreatic cancer patients in January 2017 - January 2018 at the Laboratory of Clinical Medicine and Mechanical Installation of Dr. Wahidin Sudirohusodo Hospital, Makassar.

Results and Discussion: Total of 39 pancreatic cancer subject aging 31-93 years were found, most of them were women. Pre ERCP Amylase levels with a value of 167.5 ± 235.6 and post ERCP amylase levels with a value of 137.5 ± 159.4. Some subject showed decreased level and some showed increased level. Statistical tests did not show significant results (Wilcoxon-Signed Rank Test p > 0.05)

Conclusions and Suggestions: Serum amylase levels that have
increased therapeutic post ERCP can be information for clinicians to pay more attention to ERCP cannulation techniques in order to avoid post ERCP complications.

It is recommended to make further study using primary data for avoiding bias.

**Keywords:** Pancreatic Cancer, Serum Amylase, ERCP

**Correlation of lipoprotein (A) with severity of ischemic stroke in Dr. Soedono Madiun Hospital**

Rahma Yuanarti¹, Dinik Wuriyanti², Djoko Siswanto³, Linda Rosita⁴

¹ Clinical Pathology Department, Faculty of Medicine, UII, Yogyakarta
² Neurology Departement, RSUD Dr Soedono, Madiun
³ Clinical Pathology Departement, RSUD Dr Soedono, Madiun

**Background:** Lipoprotein (a) is a lipid component with proatherogenic and prothrombogenic component. Levels of Lp(a) are influenced by genetic factors. Lp(a) has a role in the pathogenesis of stroke, but research on its association with the severity of stroke shows vary on results. This study aims to determine correlation of Lp(a) the severity of ischemic stroke measured by the NIHSS score.

**Method:** This study was a prospective observational research conducted at Dr. Soedono Madiun in December 2016 - May 2017. The inclusion criteria were patients with first acute ischemic stroke. Exclusion criteria included patients with liver disease, kidney disease, pregnancy, sepsis. Lp (a) was examined by the immunoturbidimetry method. The NIHSS score was examined when the patient arrived (NIHSS 1) and on day 7 or the day patient left the Stroke unit (NIHSS 2). Statistical analysis was performed by computerization.

**Result:** There were 40 subjects, 27 men and 13 women. Higher median level of Lp(a) was found in more severe type of stroke. The group with Lp (a) level more than 30 mg/dL had a higher median NIHSS score than the group with Lp (a) level lower than 30 mg/dL. HDL dan LDL had no correlation with stroke severity (p>0.05), Triglycerida only had significance correlation with NIHSS 2 (r = 0.366; p 0.021). Lp (a) had a significant correlation with NIHSS 1 score (r = 0.394; p 0.012) and NIHSS 2 (r = 0.366; 0.020).

**Conclusion:** Lp (a) has a correlation with the severity of stroke. Lp (a) can be one of the biomarkers that needs to be monitored in subjects who have a risk of cerebrovascular disease.

**Keyword:** Lipoprotein (a), Ischemia stroke severity, NIHSS score.

**Wilms tumor**

**Case Report**

Rizka Sari Angawaty Hrp¹, Rizki Luly YFP⁴, Nindia Sugih Arto³, Ratna Akbari Ganie²

¹PPDS Clinical Pathology, Faculty of Medicine, University of North Sumatra, Medan
²Clinical Pathology Department, Faculty of Medicine, University of North Sumatra, Medan

**Background:** Wilms tumor is a kidney tumor that grows from primitive kidney embryonal cells, found in children aged 1 - 5 years, appearing as an asymptomatic mass in the abdomen. Usually unilateral, although it can occur in both kidneys (bilateral). Wilms tumor is 6% of all cases of malignancy in children, and more than 95% of kidney tumors found in children.

**Case Description:** A 3-year-old boy came to the Haji Adam Malik Hospital emergency room with complaints of stomach enlargement in 1 month accompanied by bloody urination experienced in 1 week. Fever 7 days before entering the hospital, fever is lost and falls with paracetamol. History of trauma is not found. On physical examination found blood pressure 140/110 mmHg, conjunctival palpebral anemia was found, laboratory examination found hemoglobin 8.5 g / dl, leukocytes 9,980 / µL, platelets 609,000 / µL and examination of urine obtained the impression of gross hematuria. Patients are referrals from hospitals. USU has been treated for ± 5 days and has done abdominal ultrasound with an impression of irregular lesions in the right kidney measuring 7.85x6.5cm

**Conclusion:** Wilms tumor also known as nephroblastoma often appears as a mass in the abdomen with hematuria and hypertension. Diagnosis can be made based on physical examination and abdominal ultrasound. On laboratory examination, anemia, thrombocytosis and hematuria are found. Histopathological examination of tumor tissue with nephroblastoma impression. Treatment of Wilms Tumors is nephrectomy.

**Keywords:** Wilms Tumor, Hematuria, Hypertension

**Comparison of high sensitive troponin t diagnostic value at 1-hour and 3-hour of the suspect of acute coronary syndrome non st elevation (nstemi)**

Dian Wahyu Tanjungsrc¹, Ina Susianti Timan², Daniel P.L. Tobing³

¹ Resident of Clinical Pathology Department, Faculty of Medicine, University of Indonesia, Cipto Mangunkusumo Hospital
² Clinical Pathology Department, Faculty of Medicine, University of Indonesia, Cipto Mangunkusumo Hospital
³Departement of Cardiology, Faculty of Medicine, University of Indonesia, National Cardiovascular Center Harapan Kita

**Background:** Acute coronary syndrome (ACS) is based on clinical symptoms, ECG and cardiac markers. NSTEMI diagnosis currently requires a minimum of 3-6 hours with the use of troponin markers. This has an impact on the density and cost burden in the emergency department. European society cardiology (ESC) has recommended 1-hour algorithm on NSTEMI. This study aims to determine the comparison of diagnostic values of high sensitive troponin T (hs-cTnT) at 1-hour and 3-hour for non-ST-elevation acute coronary syndromes.

**Method:** The study design conducted was cross-sectional. Hs-cTnT was measured at presentation,1-hour and 3-hour from 20 patients with chest pain onset less than 6 hours and met inclusion and exclusion criteria. Precision test used control materials. Statistics used diagnostic tests with cut-off in accordance with the 2015 ESC guidelines, as for the mean comparison using the Wilcoxon test.

**Results:** Coefficient of variation (CV) range within run precision test were 0.51% -0.58% and between day 1.64% -2.61%. The median value of hs-cTnT at 1-hour was 128.5 [46-661]pg/ mL with a sensitivity of 87.5% and specificity of 91.6%, whereas in the 3-hour it was 124 [46-1124]pg/mL with a sensitivity of 77.8% and specificity 90.9 %. Wilcoxon mean difference test obtained p = 0.575, there were no significant differences between the first and third hour hs-cTnT levels.

**Kesimpulan/Conclusion:** hs-cTnT level at 1-hour can replace hs-cTnT at 3-hour, with sensitivity and specificity more than 85% in patients suspected acute coronary syndrome NSTEMI with chest pain onset less than 6 hours.

**Keywords:** chest pain, cardiac marker, 1-hour algorithm.
Severe diabetic ketoacidosis on children

Yudhistira¹, Burhanuddin Nst¹, Nindia Sugih Arto¹, Karina Sugih Arto²
¹Clinical Pathology Department, Faculty of Medicine, University of North Sumatera / H. Adam Malik Hospital, Medan
²Pediatric Department, Faculty of Medicine, University of North Sumatera, / H. Adam Malik Hospital, Medan

Background: Diabetic ketoacidosis (DKA) is an emergency condition which is a complication of type 1 and type 2 diabetes mellitus (DM). DKA characterizes symptoms of hyperglycemia, acidosis and ketosis. The prevalence of DKA in the United States is estimated at 4.6 - 8/1000 people with DM, with mortality less than 5% or around 2.5%. In Indonesia there’re no exact figures yet.

Case Description: 11-year-old boy, a major complaint of shortness breath 1 day before hospital admission, symptoms accompanied by nausea, vomiting and abdominal pain. Patients also complain of weight loss for no reason, excessive thirst and hunger and frequent urination. Family history of DM is found. Laboratory tests revealed blood sugar levels of 564 mg/dL, ketonuria +4 and blood gas analysis with pH 6.966 and HCO3 3.7 mmol/L. The diagnosis of patient is severe DKA. The cause of this condition in this type 1 DM patient is evidence low yield of C-peptide, which is 0.40ng/mL.

Conclusion: DKA was caused decrease in insulin work that increases the work of glucagon, catecholamine and cortisol hormones which also results in increased glucose production in liver and kidney. Increased lipolysis and ketone body formation result osmotic diuresis, dehydration and electrolyte loss. The risk of DKA in type 1 DM patients was increased in children with poor metabolic control.

Keywords: diabetic ketoacidosis, diabetes mellitus, children

The degree of liver fibrosis analysis with apri score and FIB4 index on patients with non-alcoholic fatty liver

Gillian Selpala¹, Nuraahmi², Ibrahim Abd Samad³
¹Medical Doctor Specialist Education Program of Clinical Pathology, Faculty of Medicine, Hasanuddin University / Dr. Wahidin Sudirohusodo Hospital, Makassar
²Department of Clinical Pathology, Faculty of Medicine, Hasanuddin University / Daya Hospital, Makassar
³Department of Clinical Pathology, Faculty of Medicine, Hasanuddin University / Ibnu Sina Hospital, Makassar

Background: Liver fibrosis is the accumulation of extracellular matrix protein (MES) scar tissue after acute or chronic liver injury. Liver biopsy is the gold standard method for evaluating liver fibrosis in patients with non-alcoholic fatty liver disease (NAFLD). This diagnostic method is invasive, painful, and complicated in rare cases, hence the noninvasive method like laboratory tests and radiology had been proposed to assess liver fibrosis in NAFLD and can overcome the limitations of liver biopsy. This method consists of aspartate aminotransferase to platelet index ratio (APRI) and fibrosis 4 (FIB-4).

Methods: This retrospective cross sectional study was conducted at Wahidin Sudirohusodo Hospital Makassar by taking a total sample of 63 people from January to June 2018. The correlated variables were made in categorical and numerical using Pearson Correlation statistical test, to assess the compatibility of APRI Score and FIB4 Index with Fibroscan result in patients with NAFLD.

Results: A highly significant positive correlation (p <0.001) was found between APRI score and fibroscan (correlation value = 45,8%), APRI Score and FIB4 index (correlation value = 91,8%), FIB4 index and fibroscan (correlation value = 47,6%).

Conclusion: APRI Score and FIB-4 Index can be an alternative method instead of liver biopsy to predict the degree of fibrosis in patients with NAFLD.

Keywords: Liver Fibrosis, APRI Score, FIB4 Index.

Cardiorenal syndrome in chronic heart failure patient with severe arrhythmia

Melissa¹, Jansen Chitrahadinata¹, Debra Nurhadi²
¹Medicine Staff of Sumber Waras Hospital, DKI Jakarta
²Medicine Staff of Clinical Pathology, Laboratory Department of Sumber Waras Hospital, DKI Jakarta

Background: The maintenance of body’s hemodynamic stability depends on the heart performance and renal function. Both organs work are interconnected that the damage of the heart lead to the dysfunction of renal and vice versa. Nowadays, there are many cases when heart disease lead to renal dysfunction, or renal damage induce to heart failure. Cardiorenal syndrome, the term used for the condition, has caused significant increase in both mortality and morbidity, complexity of the treatment, and expensive cost of care.

Case Description: A 54 year old male with history of Chronic Heart Failure, presented with difficulty of breathing and epigastric pain. His ECG showed severe arrhythmia of ventricular tachycardia. He was observed in Intensive Care after being treated with synchronized cardioversion. His blood test’s result showed a high level of BNP (2.610 pg/mL) with an increased creatinine level (2,1 mg/dL). After being treated with heparin, continuous intravenous furosemide and isorbid for nine days, his creatinine level became normal again (1,1 mg/dL).

Conclusion: In both heart failure and severe arrhythmias, acute lowering of cardiac output lead to hemodynamic instability and renal injury. With adequate treatment in early stage, the impairment of the renal could be avoided. Thus, it is important to recognize and aware of the possibility of kidney injury in heart failure.

Keywords: cardiorenal syndrome, heart failure, kidney injury, biomarkers, severe arrhythmias.

Comparison of blood gas analysis parameters in samples transported by pneumatic tube system and manual transport

Hantoro Gunawan¹, Ferdy Royland Marpaung²
¹Clinical Pathology Specialization Programme, Department of Clinical Pathology, Faculty of Medicine-Airlangga University-Dr Soetomo Hospital, Surabaya, Indonesia
²Department of Clinical Pathology, Faculty of Medicine-Airlangga University-Dr Soetomo Hospital, Surabaya, Indonesia

Introduction: Pneumatic Tube System (PTS) can reduce time needed to transport laboratory samples, thus resulting in faster turnaround time (TAT). Blood gas analysis is an urgent laboratory examination and it would benefit to send the sample using PTS. Some studies showed effect of PTS on blood gas parameters, so laboratory should validate the usage of PTS before delivering the samples.

Method: Blood gas samples from 31 patients were divided into two syringes. One syringe was delivered by PTS and the other was
delivered by courier. Delivery distance was 250 meters for both transportations. Both samples then were examined by qualified laboratory analyst. The pH, pCO₂, and pO₂ were compared.

**Result:** Result of pH, pO₂, and pCO₂ in PTS samples was not significantly different compared to manual transportation (p=0.055, p=0.955 and p=0.856 respectively). Bland-Altman plot was made for each parameter and there was a good agreement between both types of transportation.

**Discussion:** The result of this study showed no significant difference on blood gas parameters sent by PTS or manual transportation. PTS can replace courier on delivering blood gas samples. Alteration of pO₂ during PTS transportation might be caused by pressure and acceleration, but it was not seen in this study. Every installation of PTS is unique, so laboratory should validate the usage of PTS in delivering blood gas samples.

**Conclusion:** PTS can replace manual transportation in delivering blood gas samples to central laboratory. Every laboratory should validate the usage of PTS in delivering blood gas samples.

**Keywords:** Blood Gas Analysis, Pneumatic Tube System, Sample Transportation, Turnaround Time

The compatibility analysis of serum ascites albumin gradient and ascitic fluid evaluation to clinical diagnosis of the patient

Ivonne Desiana¹, Yuyun Widaningsih², Fitriani Mangarengi³
¹Medical Doctor Specialist Education Program of Clinical Pathology, Faculty of Medicine, Hasanuddin University / Dr. Wahidin Sudirohusodo Hospital, Makassar
²Department of Clinical Pathology, Faculty of Medicine, Hasanuddin University / Hasanuddin University Hospital, Makassar
³Department of Clinical Pathology, Faculty of Medicine, Hasanuddin University / Syekh Yusuf Hospital, Gowa

**Background:** Ascites is a condition of abnormal fluid accumulation in the peritoneal cavity that can be caused by many underlying diseases. Some studies conclude that ascitic fluid evaluation with transudate-exudate concept has been replaced by greater indicator, known as Serum Ascites Albumin Gradient (SAAG). This study aims to analyze the compatibility of SAAG and ascitic fluid evaluation to the clinical diagnosis of patients in Dr. Wahidin Sudirohusoso Hospital Makassar.

**Methods:** The retrospective cross-sectional study was conducted by taking data from all patients with ascites condition examining both ascitic fluid and serum albumin simultaneously or within 3 days at the Dr. Wahidin Sudirohosodo Hospital Makassar from January – August 2018. The statistical analysis was performed for frequency distribution and Kappa statistical test to assess the compatibility of SAAG and ascitic fluid evaluation to clinical diagnosis of the patient.

**Results:** The study was conducted on 68 subjects and found that both ascitic fluid examination and SAAG were significantly compatible to the clinical diagnosis, 25.8% (p<0.05), 42.5% (p<0.001), respectively.

**Conclusion:** SAAG and ascitic fluid evaluation were significantly in accordance with the clinical diagnosis of the patient. The compatibility value of SAAG is greater than ascitic fluid evaluation so that SAAG is more recommended for ascites examination.

**Key Words:** SAAG, ascitic fluid evaluation, transudate-exudate, clinical diagnosis

Diagnostic test of high sensitive - troponin I poct method in patient with acute coronary syndrome

Intan Merdekadini Ginting¹, Novi Khila Firani²,³
¹PPDS Patologi Klinik Fakultas Kedokteran Universitas Brawijaya Malang/RSUD dr. Saiful Anwar, Malang
²Departemen Patologi Klinik Fakultas Kedokteran Universitas Brawijaya Malang
³Departemen Biokimia Biomolekuler Fakultas Kedokteran Universitas Brawijaya Malang

**Background:** Acute Coronary Syndrome (ACS) consists of acute myocardial infarction with ST-segment elevation, non-ST-segment elevation, and unstable angina pectoris. Diagnosis of ACS requires a fast and appropriate time for better patient management. Troponin I is a biomarker which can help to establish SKA diagnosis. Troponin I is not found in skeletal muscle so it is specific to myocardial tissue.

**Methods:** This was an observational analytic study with cross sectional design done in dr. Saiful Anwar General Hospital Malang in April-May 2018. Subject were 60 people which suspected of having acute coronary syndrome, receive electrocardiographic examination, and blood tests. Plasma troponin I level was measured using EDTA venous blood sample with Alere Triage Meter Point of Care Testing (POCT). Analytical statistic was calculated by SPSS 25. The result was analyzed by diagnostic test in the form of sensitivity, specificity, positive predictive value (PPV) dan negative predictive value (NPV).

**Result:** The sensitivity, specificity, PPV, and NPV of this assay were 100%, 50%, 63.6%, and 100% at cut off level of 0.025ng/mL.

**Conclusion:** Examination of hs-troponin I with POCT has an excellent sensitivity and NPV value but has a low specificity and PPV value.

**Keywords:** hs-Troponin I, acute coronary syndrome, POCT

Hypoxic hepatitis in patient with congestive heart failure

Dahlan Riduantu Siahaan¹, Burhanuddin Nasution²
¹Department of Clinical Pathology, Faculty of Medicine, University of North Sumatera-Haji Adam Malik Hospital, Medan

**Background:** Hypoxic Hepatitis is an extensive liver damage due to acute hypoperfusion. Liver cell necrosis with a sharp increase in serum aminotransferase often occurs in patients with heart failure, circulatory failure, or respiratory failure that causes forward failure and decreased cardiac output.

**Case Description:** A man aged 48 years, came to the emergency department of Haji Adam Malik Hospital with complaint shortness of breath, often waking at night because of shortness of breath so had to sleep in a half-sitting position. Fever found 1 week with up and down circadian, cough with green phlegm and nausea was found. History of smoking ≥ 24 cigarettes/day since 20 years ago. History of suffering from Congestive Heart Failure with use of digoxin, simarc and furosemide. Sensorium composmentis with decreased cardiac output.

**Result of pH, pO₂, and pCO₂:**
- pH: 7.42
- pCO₂: 35 mmHg
- pO₂: 80 mmHg

**Blood Tests:**
- Hemoglobin: 11.7 g/dl
- Leukocytes: 28,150 /µL
- Platelets: 219,200 /µL
- Temperature: 38°C
- Blood glucose: 110 mg/dL
- Sodium: 140 mEq/L
- Potassium: 3.8 mEq/L
- Chloride: 101 mEq/L
- Bicarbonate: 24 mEq/L
- Calcium: 9.5 mg/dL
- Phosphate: 4.5 mg/dL
- Albumin: 3.4 g/dL
- Total protein: 6.9 g/dL
- Total bilirubin: 3.38 mg/dL
- Direct bilirubin: 1.09 mg/dL
- Alkaline phosphatase: 402 U/L
- Aspartate aminotransferase: 72 U/L
- Alanine aminotransferase: 1488 U/L
- LDH: 1488 U/L
- Procalcitonin: 4.27 ng/mL

**Urinalysis:**
- Colour: cloudy
- pH: 4.5
- Specific gravity: 1.012
- Protein: trace
- Glucose: negative
- Ketones: negative
- Bilirubin: negative
- Urobilinogen: positive
- Blood: negative
- Casts: negative
- WBC: 0-2
- Erythrocytes: 0-2

**Conclusion:** The result of this study showed no significant difference from patients with congestive heart failure. Blood gas analysis results suggest acute hypoperfusion. Laboratory examination results support the diagnosis of hypoxic hepatitis. The patient had to be treated with diuretics, digoxin, and simarc.
leukosituria were found.

Conclusion: Hypoxic Hepatitis needs to be considered in heart failure patients with the presence of jaundice or scleral icteric and elevated liver enzymes with negative viral serology.

Keyword: Hypoxic Hepatitis, Congestive Heart Failure, Increased liver enzymes.

Correlation test of troponin I and high-sensitivity troponin I level with coronary angiography in suspected coronary artery disease

Dessy Iriana1, Asvin Nurulita2, Darmawaty3
1Educational study program for clinical pathology specialists, Medical Faculty of Hasanuddin University
2Clinical Pathology Study Program, Medical Faculty of Hasanuddin University

Background: Coronary artery disease (CAD) is a narrowing of blood vessels due to the formation of atherosclerotic plaques which can cause oxygen supply to the heart to be disrupted. High sensitivity troponin I (hsTnI) is a diagnostic tool for detecting heart disorders with minimal injury to the heart muscle. The aim of this study was to compare and see the relationship between troponin I (TnI) and hsTnI with coronary angiography in suspected CAD.

Methods: This study used a cross sectional design, using primary data by taking blood samples in suspected CAD who will undergo coronary angiography examination at RSUP Dr.Wahidin Sudirohusodo Makassar. Samples are taken from a population of subjects who met the inclusion criteria by using consecutive sampling technique period September 2018. Statistical analysis with descriptive statistical calculations, frequency distribution and statistical tests of Spearman’s Correlation. The test results significant if p<0.05.

Results: In 31 subjects showed that CAD is more common in men and most at the age 50-69 years. Data were analyzed by Spearman correlation test showed a significant correlation between TnI, hsTnI and the degree of stenosis with p<0.001. The correlation coefficient TnI and degree of stenosis is 0.707, hsTnI with degree of stenosis is 0.877 and TnI with hsTnI is 0.804.

Conclusion: Higher levels of TnI and hsTnI are related to the severity of stenosis in CAD.

Keywords: CAD, Troponin I, High-sensitivity troponin I, Coronary angiography.

Analysis of diagnostic value of c-reactive protein in pediatric patients with appendicitis

Hermawan1, Darwati Muhadi2, Ibrahim Abdul Samad3
1Medical Doctor Specialist Education Program of Clinical Pathology, Faculty of Medicine, Hasanuddin University / Dr. Wahidin Sudirohusodo Hospital, Makassar
2Department of Clinical Pathology, Faculty of Medicine, Hasanuddin University / Dr. Wahidin Sudirohusodo Hospital, Makassar
3Department of Clinical Pathology, Faculty of Medicine, Hasanuddin University / Ibu Sina Hospital, Makassar

Background: Acute appendicitis associated with acute phase reaction is the most prevalent disease which requires emergency surgery. Its delayed diagnosis and unnecessarily performed appendectomies lead to numerous complications. In our study, we aimed to detect the role of C-reactive protein (CRP) in the exclusion of acute and complicated appendicitis and diagnostic accuracy in pediatric age group.

Methods: A retrospective analytic observational study with cross-sectional design was performed on 69 children with definitive appendicitis. Appendectomized patient groups were constructed based on the results of histopathological evaluation. The area under a receiver operating characteristic (ROC) curve (AUC) was performed to examine diagnostic accuracy.

Results: Based on cut-off values of ≥ 22.6 mg/dL for CRP level, diagnostic parameters were as follow: sensitivity 97.4%, specificity 80.0%, PPV 97.4%, NPV 80.0%, and diagnostic accuracy 89.9%. AUC values were 0.98 (95% CI 0.96 – 0.99) for CRP.

Conclusion: For complicated appendicitis, CRP has the highest degree of diagnostic accuracy. The diagnosis appendicitis should be made primarily based on clinical examination, and obviously more specific and systemic inflammatory markers are needed. Cut-off values of CRP ≥ 22.6 mg/dL provides discrimination values for complicated appendicitis.

Keyword: appendicitis, pediatric, CRP.

Ureum reduction ratio dan estimated glomerular filtration rate in patient outgoing haemodialysis

Edward Mario H, Silaban1,2, Herman Hariman1
1Postgraduate Program in Clinical Pathology Specialization, University of North Sumatra
2Department of Clinical Pathology, Faculty of Medicine, University of North Sumatra
3Department of Internal Medicine, Faculty of Medicine, University of North Sumatra

Background: Hemodialysis is the most frequent kidney replacement therapy in patients with stage V CKD (eGFR <15ml / minute / 1.73m2). Hemodialysis aims to remove excessive toxins or urea in the body, find adequate hemodialysis, then need to know the value of urea reduction ratio (URR).

Aim: To determine the correlation of URR and eGFR in patients with regular hemodialysis.

Method This study was conducted on stage V CKD patients who received regular HD with a total of 50 patients. Urea examination is done before and after 30 minutes after HD is done. Urem is examined using Architec plus 4100 devices. The URR value is calculated with the pre HD ureum formula. Urem post HD and divided by pre HD ureum. The eGFR value is calculated using the CKD-EPI formula.

Results and Discussion: A total of 50 subjects participated in the study, 30 men (60%), 20 woman (40%). average value of the URR was obtained 72.23 ± 7.9 and average value of eGFR 3.9 ± 1.76, there was no correlation between URR and eGFR values in patients undergoing regular HD (p = 0.973).

Conclusion: No correlation between URR values and eGFR in patients undergoing regular HD.

Keyword: URR, eGFR, hemodialysis.

Correlation of fibroscan, FIB-4 and aarpri index as liver fibrosis marker to chronic hepatitis B patients

Sitti Khadijah1, Tenri Esa2, Mutmainnah3
1Medical Doctor Specialist Education Program of Clinical Pathology, Faculty of Medicine, Hasanuddin University/Dr. Wahidin Sudirohusodo Hospital Makassar
2Department of Clinical Pathology, Faculty of Medicine, Hasanuddin University/South Sulawesi Province Hospital Makassar
3Department of Clinical Pathology, Faculty of Medicine, Hasanuddin University/Dr. Wahidin Sudirohusodo Hospital Makassar

Background: Chronic hepatitis B patients have an increasing risk of liver fibrosis. Early fibrosis diagnosis is a key to effective treatment. In our study, we performed correlation of fibroscan, FIB-4 and aarpri index to chronic hepatitis B patients as liver fibrosis marker.
Evaluation of pleural effusion determination by light’s dan heffner’s criteria

Norjannah1, Ani Kartini2, Darmawaty ER3

1 Medical Doctor Specialist Education Program of Clinical Pathology, Faculty of Medicine Hasanuddin University / Dr Wahidin Sudirohusodo Hospital, Makassar
2 Department of Clinical Pathology Faculty of Medicine, Hasanuddin University / Labuang Baji Hospital. Makassar
3 Department of Clinical Pathology Faculty of Medicine, Hasanuddin University / Hospital Islam Faisal Hospital. Makassar

Background: Pleural effusion is a condition of abnormal pleural fluid accumulates in the pleural cavity due to excessive transudation or exudation. Light’s criteria is used as the standard method to distinguish between exudates and transudates. Some recent studies reported misclassifications that develop several alternative criteria, one of which is Heffner’s criteria. The purpose of this study was to determine the sensitivity and specificity of Heffner’s criteria in determining th type of pleural effusion.

Methods: An observational study with cross sectional method using a pleural effusion fluid sample of patients examined at the Clinical Pathology Laboratory Instalation at Wahidin Sudirohusodo Hospital on July 2018 until amount minimal samples. Total protein, Lactat Dehidrogenase (LDH) and cholesterol levels were examined in all samples that met the inclusion and exclusion criteria.

Results: There were 45 samples of pleural effusion 30 of which classified as transudate and 15 samples as exudates. Based on clinical diagnosis, the Light’s criteria obtained 3 misclassifications and Heffner’s criteria obtained 2 misclassifications. Based on the data above, the statistical data showed that Light’s criteria has sensitivity 96,7 % and specificity 86,7 %. Heffner’s criteria has sensitivity 100 % and specificity 86,7 %.

Conclusion: Heffner’s criteria offers better sensitivity and specificity than Light’s criteria. Heffner’s criteria can be used as an alternative in determining the type of pleural effusion.

Keywords: Heffner’s criteria, Light’s criteria, transudate, exudate, pleural effusion

Analysis of the difference of capillary and serum blood glucose levels in anemia and normal hemoglobin patients

Anton Triyadi1, Liong Boy Kurniawan2,4, Nurahmi2,4

1 Medical Doctor Specialist Education Program of Clinical Pathology, Faculty of Medicine, Hasanuddin University / Dr Wahidin Sudirohusodo Hospital, Makassar
2 Department of Clinical Pathology, Faculty of Medicine, Hasanuddin University / Dr Wahidin Sudirohusodo Hospital, Makassar
3 RSPTN Universitas Hasanuddin Makassar
4 RSUD Kota Makassar

Introduction: Chronic Kidney Disease (CKD) results in hypocalcemia which plays a role in the occurrence of secondary hyperparathyroidism (SH). SH if prolonged will result in renal osteodystrophy. In the US, 56% CKD patients with eGFR <60 ml/min/1.73m2 experienced an increase in parathyroid hormone. Case: A 38-year-old male, came to the ER, Dr. Soetomo Hospital with complaints of back pain since 2 months, worsened in the last 2 weeks. He was diagnosed with CKD V, underwent hemodialysis since 2010. Physical examination: BP 140/90 mmHg, VAS score 7, conjunctiva anemic, pale upper and lower extremities, straight leg raising test (+). There was an increase in BUN, creatinine, phosphate, alkaline phosphatase, intact parathyroid hormone, CAxP product. Calcium was normal. Bone survey of clavaria, humerus and antebrachii (D), femur cruris (S), manus (D, S), showed features of renal osteodystrophy. Thoracolumbal MRI and Myelography: corpus VL1 grade II wedge fracture, superior irregularity corpus endplate VTh 12. USG coli: parathyroid gland enlargement. SH can occur in CKD especially those undergoing hemodialysis. Renal osteodystrophy is a systemic disorder of mineral metabolism and bone matrix due to SH. This patient was diagnosed as SH and osteodystrophy based on history, laboratory and radiological examinations. The gold standard for osteodystrophy diagnosis is bone biopsy, but was not performed because it is complicated and invasive. Based on KDIGO 2009 and 2017, bone biopsy is performed if the fracture, hypercalcemia and/or hypophosphatemia are unexplained, persistent bone pain, before biphosphonate therapy. In this patient, osteodystrophy can be explained by SH due to CKD V.

Conclusion: Renal osteodystrophy is obtained by SH due to CKD V. Bone biopsy was not planned, because the cause of osteodystrophy could be established besides it is complicated and invasive.

Key words: secondary hyperparathyroidism, renal osteodystrophy, chronic kidney disease.
Background: Glucose is the main source for human cell as a primary energy, transported into cells to produce energy. Hematocrit is percentage of erythrocyte volume expressed in percent (%). Blood glucose examination can be performed by using 2 (two) devices, i.e. glucometer as a Point of Care Test (POCT) and spectrophotometer. POCT requires only a small sample of capillary blood, but has several disadvantages such as the accuracy is unknown, affected by the level of hematocrit, interference of other substances (bilirubin, lipids, hemoglobin) and temperature.

Methods: This was a cross-sectional research conducted at the Installation of the Clinical Pathology Laboratory of RSUP dr. Wahidin Sudirohusodo Makassar, from August to September 2018. Serum blood glucose levels were examined by using ABX Pentra 400, while capillary blood glucose levels in whole blood were examined by POCT device with glucose oxidase method.

Results: There was no significant difference between serum and capillary glucose levels in both anemia (122.7 ± 109.8 mg/dl, p=0.329) and normal hemoglobin patients (126.0 ± 118.3 mg/dl, p=0.083)

Conclusion: There was no significant difference between serum and capillary glucose levels in anemia and normal hemoglobin patients.

Keywords: Hematocrit level, capillary blood glucose level, serum blood glucose level

Comparison of concentration alteration between ST2 dan NT-pro BNP concentration Before and after ace-inhibitors In nyha III-IV heart failure patients

Veronika Juanita Maskito¹, Leonita Anniwati², Aminuddin³
¹ Clinical Pathology Specialization Program Faculty of Medicine Airlangga University- Dr. Soetomo Hospital Surabaya Indonesia.
² Department of Clinical Pathology Faculty of Medicine Airlangga University- Dr. Soetomo Hospital Surabaya Indonesia.
³ Department of Cardiology and Vascular Medicine Faculty of Medicine Airlangga University- Dr. Soetomo Hospital Surabaya Indonesia.

Background: The American Heart Association (2016) stated that at the age of forty the risk of developing heart failure is one in five. Medication’s dose is based on clinical signs and symptoms that are often late. Early cardiac markers are required to guide therapy. This study compared the alteration between ST2 and NT-ProBNP concentrations before and after ACE inhibitors (ACE-I) in NYHA III-IV heart failure patients.

Method: This was a randomized prospective observational study without controls. The respondent were males or females, 21-75y.o in NYHA III-IV heart failure patients. Twenty five respondents were appropriate to inclusion criteria. ST2 was measured by Quantikine®ST2/IL-33R quantitative sandwich ELISA immunoassay while NT-proBNP was measured by Immulite Turbo® 1000.

Result: The majority of respondents were males(60%) and had comorbidities(60,7%), consisting of NYHA Class III(36%) and IV(64%). Heart failure etiology was dominated with valve disease and cardiomyopathy (32%,24% respectively). Length of stay was 6.4±3.4days. The concentration alteration of ST2 and NT-proBNP before and after ACE-I were both significant, however, NT-proBNP was more significant (p=0.001 vs p=0.023). NYHA at admission influenced ST2 alteration but not NT-proBNP. NT-proBNP concentration correlated to length of stay while ST2 was not. ST2 had negative correlation with age, no correlation to GFR and weight. NT-proBNP was correlated to weight, negatively correlated to GFR, not correlated to age. ACE-I subgroups difference did not affect the study result.

Conclusion: NT-proBNP is a better heart failure cardiac marker than ST2 due to its ability in diagnosis, prognosis and showing more significant alteration after ACE-I administration.

Keywords: NT-proBNP, ST2, ACE-I therapy, NYHA III-IV heart failure

Lactate/albumin ratio as a predictor of mortality in sepsis patients in RSUP ICU. H. Adam Malik Medan and connected to sofa scores

Azmi Noer¹, Yutu Solihat², Ratna Akbari Ganie³
¹ Department of Clinical Pathology, Faculty of Medicine, Universitas Sumatera Utara/RSUP H. Adam Malik Medan
² Department of Anesthesiology and Intensive Therapy, Faculty of Medicine, Universitas Sumatera Utara/RSUP H. Adam Malik Medan

Introduction: Sepsis is the main cause of mortality in critical cases various parts of the world. Tissue hypoperfusion is an important factor in its occurrence organ dysfunction. Increased lactate levels indicate organ dysfunction which is associated with increased mortality. Hypoalbuminemia can increase mortality. Then the lactate ratio/albumin is used as a predictor of mortality in septic patients, which is associated with SOFA score. High mortality and a poor prognosis are seen in patients with lactate/albumin ratio >0.15.

Methods: This study took blood samples of septic patients who were treated in ICU as much 15 patients. Samples were examined for lactate, albumin, lactate/albumin ratio and SOFA scores, which are checked on the first and third days.

Results and discussion: 6 man (40%), and 9 woman (60%) with an average age 53.60 ± 12.81 years. The first day’s lactate/albumin ratio has no significant relationship with the first day’s SOFA score (p=0.495), The third day’s lactate/albumin ratio has not a significant relationship with the score SOFA the third days. (p<0.05)

Conclusions and Suggestions: The lactate/albumin ratio cannot predict the mortality of septic patients. Further research is needed to see the lactate/albumin ratio as a predictor mortality in septic patients.

Keywords: sepsis, lactate, albumin, lactate/albumin ratio, SOFA scores

The correlation between leptin and platelet parameters in obesity

Dwi Fajaryani¹, Meita Hendrianiingtyas², Dwi Retnoningrum³
¹ Resident of Clinical Pathology Departement, Faculty of Medicine Diponegoro University Semarang
² Staff of Clinical Pathology Departemen, Faculty of Medicine Diponegoro University Semarang

Background: Obesity is excessive and abnormal fat accumulation thus harmful to health. Leptin is a hormone which synthesized and released by adipose tissue informs the brain for controlling hunger and food intake, which correlated with fat mass, being increased in obesity. Leptin plays a role in chronic inflammatory process of obesity. Leptin receptor was detected in human platelets and high concentration of leptin reported to promote platelet aggregation. The platelet parameters examination is a cheap, easy, and routinely
Correlation between chronic kidney disease (ckd) and hypothyroid

I Gede Ardy Surya 1, Indranila KS 2

1 Resident of Department of Clinical Pathology Faculty of Medicine Diponegoro University
2 Staff of Department of Clinical Pathology Faculty of Medicine Diponegoro University

Background: Thyroid hormone in many previous studies have been linked to CKD (chronic kidney disease). There are several interactions between renal dysfunction and thyroid hormones that influence each other. The aim of this study was to see the effect of CKD on the thyroid.

Methods: Cross sectional studies on subject data taken retrospectively by looking at medical records on a single center Dr. Kariadi Semarang Hospital during the period 1 June 2017 - 1 June 2018 to then observe the correlation effect of CKD on thyroid hormones by comparing serum urea and creatinine with T3, T4 and TSH.

Results: There was a significant effect of CKD on T3 (p = 0.020 and p = 0.011) and on TSH levels, and there was a significantly weak correlation with urea (p = 0.025), and there was no significant correlation in T4 (p = 0.108 and p = 102).

Conclusion: The results of this study can be concluded that there is a significant correlation between Chronic Kidney Disease (CKD) and hypothyroidism, especially the correlation effect of T3 with urea and creatinine, and TSH with urea.

Keywords: Hypothyroid, Chronic Kidney Disease, renal function, thyroid hormone.

Correlation between resting metabolic rate (RMR) and body composition with HBA1C levels in obesity

Inggrid Lovita 1, Meita Hendrianingtyas 2, Ria Triwardhani 2

1 Clinical Pathology Residency Program of Medical Faculty Diponegoro University/ Laboratory Department dr. Kariadi Hospital Semarang
2 Clinical Pathology Department of Medical Faculty Diponegoro University Semarang/ Laboratory Department dr. Kariadi Hospital Semarang

Background: Obesity occurs due to an imbalance intake and energy expenditure. The cause of obesity is low energy expenditure where as the resting metabolic rate (RMR) is the largest component of energy expenditure of the body. The factors that influence RMR are body composition, age, sex and hormonal status. Body composition measured as fat mass and free fat mass (FFM). Body fat increase in obesity can cause insulin resistance which will increase blood glucose levels. This study aims to determine the correlation between RMR and body composition (fat mass and FFM) with HbA1c levels increase as a parameter of diabetes mellitus in obesity.

Methods: Cross sectional study design to 38 subjects young adults obese. Resting metabolic rate and body composition (fat mass and FFM) measured with Omron Karada scan HBF 375. HbA1c measured with ion-exchange HPLC method. Statistical analysis using the Spearman’s correlation test. (p < 0.05).

Results: HbA1c mean of 5.4% is still a normal value of HbA1c. There were no correlation between RMR and HbA1c (p = 0.768), fat mass with HbA1c (p = 0.102) and FFM with HbA1c (p = 0.843).

Conclusion: RMR and body composition (fat mass and FFM) are not associated with HbA1c levels in obese young adults.

Keywords: resting metabolic rate, fat mass, free fat mass, HbA1c, obesitas.
Correlation of serum magnesium level with blood pressure in chronic kidney disease

Maulida Devi Yanti¹, Lisyani B Suromo²
¹ Resident of Clinical Pathology of Medical School of Diponegoro University
² Staff of Clinical Pathology Department of Medical School of Diponegoro University

Introduction: Increased blood pressure is one of the complication from hemodialysis in Chronic Kidney Disease (CKD) patients. Magnesium is an electrolyte which is a calcium antagonist in regulating blood pressure. This study aims to prove the correlation of serum magnesium level with blood pressure in CKD patients.

Methods: A cross-sectional study was on 30 CKD patients in Dr. Kariadi Hospital, Semarang during September - October 2018. The serum magnesium level was measured with spectrophotometry method, blood pressure with sphygmomanometer. Statistical analysis used Pearson and Spearman correlation test.

Result and Discussion: There is a significant correlation between serum magnesium level and systolic blood pressure with p<0.001 and r=-0.737 and correlation between serum magnesium level and diastolic blood pressure with p=0.011 and r=-0.457.

Conclusion and Suggestion: There is a strong negative correlation of serum magnesium level with systolic blood pressure and moderate negative correlation of serum magnesium level with diastolic blood pressure in this study. Further studies need to be done to analyse influential factors of the blood pressure.

Keywords: CKD, Serum magnesium, Systolic blood pressure, Dyastolic

Differences of urea, sodium, potassium and chloride pre and post level hemodialysis in chronic kidney disease (CKD) patients

Syaful Anwar¹, Ariosta²
¹ 1PPDS-1 Clinical Pathology, Faculty of Medicine, Diponegoro University, Semarang
² Department/Clinical Pathology Installation, Faculty of Medicine, Diponegoro University RSUP.Dr. Kariadi Semarang

Background: Chronic Kidney Disease (CKD) is a progressive and irreversible damage to kidney function (LFG <60 ml / minute / 1.73 m²). The kidneys have roles to maintain stability, electrolyte level, osmolarity of extracellular fluid and the excrete products such as urea, uric acid and creatinine. CKD causes disruption of electrolyte fluid balance and uremia, thus requiring renal replacement therapy in the form of dialysis or kidney transplantation. Differences levels of urea, sodium, potassium, chloride pre and post hemodialysis can be input for the management of hemodialysis in CKD patients.

Method: Retrospective study of analytic observational design with cross sectional approach in pre and post hemodialysis for the period September 2018 to October 2018. Normal distribution data, carried out paired t-test. Abnormal data distribution analyzed with Wilcoxon. Significance with p <0.05.

Results: From 50 patients, most of those who did hemodialysis at the age of 51.10 ± 7.48, male 30 (60%), female 20 (40%). Urea levels pre hemodialysis 161.96 ± 53.80 mg / dL and post hemodialysis 120.70 ± 40.84 mg / dL with significant values (p<0.001). Furthermore, for sodium pre hemodialysis 134.5 mmol / L and post hemodialysis 140 mmol / L, potassium pre hemodialysis 5.6 mmol / L and post hemodialysis 4.6 mmol / L, chloride pre hemodialysis 100 mmol / L and post hemodialysis 96 mmol / L with a significant value (p <0.001).

Conclusion: There is a significant difference between pre and post hemodialysis for the parameters of urea, sodium, potassium and chloride with p <0.05.

Keywords: Chronic renal failure, urea, sodium, potassium, chloride, hemodialysis.

Correlation of sodium and potassium serum with hypothyroid in chronic kidney disease (CKD) patients

Indranila KS ¹
¹ Staff of Department of Clinical Pathology Faculty of Medicine Diponegoro University

Background : The thyroid hormone itself carries out a variety of metabolic functions including regulation of lipids, carbohydrates, proteins and electrolytes and mineral metabolism which will affect electrolyte balance, which in patients with CKD and hypothyroidism will greatly affect their serum electrolyte levels. The purpose of this study was to look at the relationship between sodium and potassium to hypothyroidism.
Correlation between changes of nt-pro BNP and hs-Troponin I level with cardiotoxicity in locally advanced breast cancer after three cycles of neoadjuvant caf chemotherapy

Cicilia Indriaty1, Leonita Anniwati1, J.Nugroho E.P1, Desak GA Suprabawati2
1 Clinical Pathology Department, Faculty of Medicine, Airlangga University - Dr. Soetomo Hospital, Surabaya
2 Cardiovascular Department, Faculty of Medicine, Airlangga University - Dr. Soetomo Hospital, Surabaya

Purpose: Cardiotoxicity examination standards using left ventricular ejection fraction (LVEF) by echocardiography are considered insensitive for detection of subclinical ventricular dysfunction. NT-pro BNP and Hs-Troponin I (hs-TnI) as cardiac biomarkers are expected to help detect early cardiotoxicity. This study aimed to analyze the correlation between changes of NT-pro BNP and hs-TnI levels with cardiotoxicity in breast cancer after three cycles of chemotherapy.

Methods: A cross-sectional observational study, conducted at the Dr. Soetomo General Hospital Surabaya. The subjects consisted of 23 breast cancer patients who underwent chemotherapy using caf regimen. NT-proBNP and hs-TnI examination used CLIA methods (Immulite 1000, ADVIA Centaur TnI-Ultra). Cardiotoxicity was based on decreased LVEF to more than 10% of the initial LVEF value using echocardiography.

Results: Significant increases in NT pro BNP and hs-TnI levels were obtained before and after treatment (p<0.000, p=0.002). A significant decrease in LVEF was obtained before and after treatment (p<0.000), but only 2 patients (8.7%) showed cardiotoxicity. There was no correlation between changes in NT-pro BNP and hs-TnI levels with changes in LVEF before and after chemotherapy (p=0.666 and r=0.095; p=0.254 and r=-0.28).

Conclusion: There was no correlation between changes in NT-pro BNP and hs-TnI levels with cardiotoxicity, which was assessed based on LVEF reduction, in locally advanced breast cancer after three-cycles of chemotherapy with caf regimen.

Key words: Breast cancer, Fluorouracil, Adriamycin, and Cyclophosphamid (CAF) regimen, NT-pro BNP, hs-TnI, cardiotoxicity

Evaluation of HbA1c assay with dimension® rxL Max and adams lite HA-8380V Arkray

Wa Ode Dila Sulistian1, Leonita Anniwati2, Sidarti Soehita2
1 Clinical Pathology Specialization Programme, Department of Clinical Pathology Faculty of Medicine, Airlangga University-Dr. Soetomo Hospital Surabaya Indonesia
2 Department of Clinical Pathology, Faculty of Medicine, Airlangga University-Dr. Soetomo Hospital, Surabaya Indonesia

Purpose: Hemoglobin A1c (HbA1c) is commonly used to monitor the glycemic control of diabetic patients. HbA1c results are very important for monitoring and treatment of diabetic patients, thus, it is necessary to evaluate the analysis of several HbA1c methods. This study aimed to evaluate the results of HbA1c levels using Dimension® RxL Max (TINIA) and ADAMS Lite HA-8380V Arkray (HPLC).

Methods: An observational analytical study, was carried out by measuring the precision of both instruments and determining the correlation of HbA1c levels in 50 samples with normal and high HbA1c levels using Dimension® RxL Max and ADAMS Lite HA-8380V Arkray. Statistical analysis was used to calculate the coefficient of variation for precision, linear regression analysis was used for the correlation and linear equations.

Result: The coefficient of variation(CV) Dimension® RxL Max in the low control within-run was 1.98% and between days 3.8%, CV high control within-run 1.1% and between-days 2.42%. In the low control of ADAMS Lite HA-8380V Arkray the within-run has a CV of 0% and between-days 0.86%, while for high control within-run showed a CV of 0.94% and CV between-days 0.96%. The correlation between the normal and high HbA1c groups was good.

Conclusion: HPLC examination is a reliable method with low measurement(CV <2.8%). There was a good correlation between the TINIA and HPLC method in both normal HbA1c levels and high HbA1c levels.

Key words: HbA1c, coefficient of variation, turbidometric inhibition immunoassay (TINIA), high-performance liquid chromatography (HPLC), diabetes mellitus

The characteristics of HbA1c and dyslipidemia of type 2 diabetes mellitus patients with macroangiopathy events in Dr. Sardjito General Hospital

Dani Amalia Ariffin1, Budi Mulyono2
1 Department of Clinical Pathology and Laboratory Medicine FKMK-UGM/Dr. Sardjito General Hospital Yogyakarta
2 Department of Clinical Pathology and Laboratory Medicine FKMK-UGM/Dr. Sardjito General Hospital Yogyakarta

Purpose: Macroangiopathy is one of the highest causes of death in Indonesia and also a major complication in patients with diabetes mellitus (DM). Glycosylated hemoglobin (HbA1c) is a biomarker of long-term glycemic control. Dyslipidemia increases the risk of coronary heart disease (CHD), stroke and peripheral artery disease (PAD) called as complication of macroangiopathy. The aim of this study is to review HbA1c profile and dyslipidemia in patients with type 2 diabetes mellitus (T2DM).

Methods: This cross sectional study was using secondary data medical records of T2DM patients at RSUP Dr. Sardjito Yogyakarta from January to June 2018. The numerical data was shown in mean for normal distribution and median for abnormal. The categorical
data was presented in proportions.

**Results:** A total of 41 subjects were involved in this study, with a median HbA1c value of 8.8%. The subjects had dyslipidemia 93%, with lipid profile: the average HDL level was low (36.5±2.06), the average LDL increased slightly (111.4±3.40,99) and TG/HDL ratio was high: 3.83. Macroangiopathy complications were found in 78% subjects, CHD was the most case. Lipid profiles in CHD were: HDL level decreased (36.3±10.3 mg/dl), LDL level increased (109.1±42.7 mg/dl), TG/HDL ratio increased (4.0±2.2,22) and HbA1c reached high level: 9.65±2.06 %.

**Conclusion:** The characteristics of HbA1c and lipid profiles of T2DM patients with macroangiopathy in Dr. Sardjito showed a decrease in HDL, an increase in LDL, high TG/HDL ratio and HbA1c level > 7%. This data could be used as the initial data for further research.

**Keywords:** Type 2 Diabetes Mellitus, HbA1c, Dyslipidemia, Macroangiopathy

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**Wilson disease**

Yona Mimanda¹, Ina S Timan²
¹Department of Clinical Pathology Faculty of Medicine and Health Sciences, Syarif Hidayatullah State Islamic University (UIN) Jakarta
²Departement of Clinical Pathology Faculty of Medicine Universitas Indonesia / National General Hospital Dr. Cipto Mangunkusumo, Jakarta

**ABSTRACT**

A 7-month-old baby girl, with fever complaints lump has enlarged. Biopsy has been carried out by tumor surgery. The patient also has a history of pancreatitis for the fifth time.

**Case Description:** A 7-month-old baby girl, with fever complaints lump has enlarged. Biopsy has been carried out by tumor surgery. The patient also has a history of pancreatitis for the fifth time.

**Background:** Wilson disease is a rare autosomal recessive disorder. Wilson disease is result from the mutation of ATP7B gene that encode copper-transporting P-type ATPase which is situated intracellular. ATP7B mutation result in defective biliary copper excretion. The resulting copper accumulation in the hepatic and extrahepatic tissues leads to copper toxicity. The clinical feature may vary from asymptomatic state to chronic liver disease, acute liver failure, neuropsychiatric manifestation and hemolysis anemia.

**Case Description:** A 14 year - old male started present symptoms since 2 years. He had anemia, followed by symptoms of liver and spleen damage, which are no palpable liver, enlargement spleen and esophageal varices. After that neurological disorders, tremors and body muscle stiffness. The diagnosis Wilson disease in these patients was late because WD is rare case and the lack of investigations supporting diagnosis and then the Cu accumulation have occurred in several organs of the body. The diagnosis based on the Leipzig score. Patients had neurological symptoms and MRI examinations that support WD, eye examination showed the presence of KF ring and laboratory examination Cu urine increased. Patients were treated using D-penicillamine chelation medication.

**Conclusion:** The diagnosis of WD came from combination of physical examination, neurological examination, eye examination, laboratory examination Cu urine, serum ceruloplasmin, Cu levels in the liver tissue and DNA analysis to find gene mutations.

**Keywords:** urinary copper, ceruloplasmin, hemolytic anemia

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**Recurrent pancreatitis and multiple cholelithiasis due to hypercalcemia in primary hyperparathyroidism**

Tammy Nurhardini¹, Yusra²
¹Peserta Program Pendidikan Dokter Spesialis Patologi Klinik Fakultas Kedokteran UI
²Staf Departemen Patologi Klinik Fakultas Kedokteran UI

**Background:** Hyperparathyroidism is a disease with excessive production of parathyroid hormone (PTH) by the parathyroid gland. The most common cause of hyperparathyroidism is an adenoma in the gland (75-85%). Primary hyperparathyroidism is the most common type of hyperparathyroidism. This increase in parathyroid hormone causes hypercalcemia and results in clinical manifestations. In this case report, the manifestation of hypercalcemia appears in the form of multiple cholelithiasis which then causes pancreatitis in patient. The patient presents with a typical clinical picture of pancreatitis, but another cause is suspected after the patient has pancreatitis for the fifth time.

**Case Description:** A woman, 24 years old, came with complaints of nausea with greenish vomiting that recurred for the fifth time. In the last treatment, the patient performed gastrointestinal binooculars and is said to have pancreatitis. The patient also has a history of a lump in the neck since 6 years ago. Since the last 6 months, the lump has enlarged. Biopsy has been carried out by tumor surgery and malignancy is suspected. Laboratory tests found normochromic normocytic anemia, more than 3-fold increase in amylase lipase, hypercalcemia, hypercalciuria, and increased intact PTH levels. On thyroid ultrasound examination, parathyroid adenoma is suspected. MSCT examination of the neck shows left parathyroid mass with struma nodosa of left thyroid as differential diagnosis.

**Conclusion:** There has been a case of a woman, 24 years old, with recurrent pancreatitis and multiple cholelithiasis due to hypercalcemia in primary hyperparathyroidism. Patient is advised to have radiographs in the vertebral, pelvis, and lower extremities to get a description of metabolic bone disease. Patient is also...
Comparison between lipid profile with hypertension in diabetes mellitus type 2 with or without hypertension

Jelita Siregar
1

1Clinical Pathology Department, Medical Faculty University of North Sumatera / H. Adam Malik Hospital, Medan

Background: Atherosclerosis is a complexity process. In its process impact endotel dysfunction, lipid issue, trombosit activity, trombosis, oksidative stres, activity of muscle in blood vessel and recently it is also known widely as inflammation factor in every steps forming atherosclerosis. Diabetes Mellitus (DM) is the main risk factor of cardiovascular disease, where the evidence of epidemiology showed that cardiovascular mortality 2-3 times higher compare with population without DM.

Objective: To find the increasing of lipid profile in DM type 2 with or without hypertension.

Material and Method: This is cross sectional study, which was held in Patology Clinic Department FK-USU / H. Adam Malik Hospital, from Agustus 2017 to November 2017. Target population is type-2 DM.

Result: It found 72 subject is 36 people as patient DM type 2 with hypertension and 36 people as control. According to statistic analysis found meaningful comparison between total cholesterol, trigliseride, HDL and LDL cholesterol in DM type 2 with hypertension compare with group of DM type 2 non hypertension with p < 0,05

Conclusion: In this study we found there are significant positive increased level of total cholesterol, trigliseride, HDL and LDL and hypertension on type-2 DM population. We also found increased LDL level with age on type-2 DM population significantly. Based on this study, lipid profile level should need be checked in type-2 DM patients because it often increased on age. Besides, LDL itself is a risk factor of the cardiovascular atherosclerosis disease.

Key Words: Diabetes, Low Density Lipoprotein, Cholesterol, Trigliseride, HDL, Hypertension

Evaluation of urine neutrophil gelatinase associated lipocalin (NGAL) as an early marker of Acute kidney injury (AKI) among Intensive Care Unit (ICU) patients: A Pilot Study

Ira Puspitawati, Ahmad Yun Jufan, Vidya Cahyaningrum, Chandra Trianna Dewi, Isniyanti Chasanah, Teguh Triyono

1Clinical Pathology and Laboratory Medicine Department, FK-KFM UGM, Yogyakarta
2Anesthesiology and Reanimation Department, K-KFM UGM, Yogyakarta
3Clinical Pathology and Laboratory Medicine Residence, FK-KFM UGM, Yogyakarta

Introduction: Acute kidney injury (AKI) is one of complications in critical patients that can increase morbidity and mortality. The condition of AKI is reversible and must be detected as early as possible. One of potential marker for early detection is urine Neutrophil gelatinase associated lipocalin (NGAL). On the other hand, urine NGAL has a limitations that its level can be interfered with by urinary neutrophils. The aim of this study is to evaluate urine NGAL as an early AKI detection marker of critically ill patients.

Methods: This is an observational prospective cohort study involving 39 patients who were admitted to the ICU of Dr. Sardjito General Hospital Yogyakarta, took place in June-August 2018. The inclusion criteria were ICU patients with age>19 years old and exclusion criteria were chronic renal failure and kidney transplantation. The AKI established based on an increase in serum creatinine levels ≥ 0,3 mg/dl in 48 hours or urine volume <0.5 ml /kg/hour in 6 hours. Mann Whitney test, Spearman and Chi Square correlation were used for statistical analysis.

Results: The results showed that there were no significant differences between the urine NGAL levels of AKI and non AKI patients (130 (85-177) ng / dl; 56.65 (2.8-1500) ng / dl, p = 0.407).

In this study only 3 cases of AKI were obtained from 39 subjects. Further analysis was carried out by looking at the correlation between urine NGAL levels and urine leukocyte count. The results showed a moderate correlation between them (r = 0.6, p = 0.001).

The proportion of patients with elevated urine NGAL levels was greater in the group of patients with elevated urine leukocyte counts compared to the group with normal urine leukocyte counts (52.2%; 6.7%, p = 0.04).

Conclusions: Evaluation of urinary NGAL application as an early marker of AKI was not optimal in this study because it is interfered by an increase of urine leukocytes.

Keywords: urine NGAL, early detection, AKI, intensive care unit

The difference between the result of bga in mixing procedure appropriately and innappropriately according to CLSI

Diah Ayu Kusuma, Banundari Rachmawati
1Resident of Clinical Pathology Faculty of Medicine Diponegoro University Semarang
2Staff of Clinical Pathology Faculty of Medicine Diponegoro University Semarang

Background: Blood Gas Analysis (BGA) is an important part of diagnosing and managing the patient’s oxygenation status and acid base balance. Emergency care installation (ER) and intensive care use BGA as an integral part of the patient’s clinical status assessment. A busy and stressful environment often increases the probability of errors that can result in adverse outcomes for patients. In particular BGA examinations, improper collection and handling of arterial blood specimens can produce wrong results. On AGD examination, one of the pre-analytic errors is mixing samples that do not meet the standards. The purpose of this study is to prove the difference between BGA parameter results between samples mixed according to CLSI standards and those that do not conform to CLSI standards.

Methods: Design of analytic observational research with cross sectional approach. The subjects of the study were patients who were admitted to the ICU of Dr. Kariadi Hospital in Semarang aged 25-50 years old which were carried out by BGA examination. Statistical analysis using paired T-test and Wilcoxon. The value was considered significant if p value <0.05.

Result: The BGA parameters that have significant differences are pO2, SO2 and Sodium with p values of <0.001, <0.001, and <0.038, respectively, between mixing samples that are not suitable and according to the CLSI standard.
While parameters that do not have significant differences are parameters of pH, pCO2, Hb, Hct.HCO3,BE.

Conclusion: Mixing samples according to standards can provide more valid BGA results that can be used by clinicians in making therapeutic decisions.

Keywords: BGA parameters, sample mixing, CLSI

Comparison of vitamin D and calcium levels in children in new diagnosed epilepsy and minimal 6 months after therapy

Ni Luh Suwasanti1, Aryati1, Darto Saharso2, Ferdy R. Marpaung1
1 Department of Clinical Pathology, School of Medicine, Airlangga University-Dr.Soetomo Hospital, Surabaya
2 Department of Pediatric, School of Medicine, Airlangga University-Dr.Soetomo Hospital, Surabaya

Introduction: Children with epilepsy should take long-term anti-epileptic drugs. Long-term use of antiepileptic drugs can reduce vitamin D levels. Low vitamin D will lead to low blood calcium levels causing bone growth disorders. Some studies have varied results so that the relationship between vitamin D and serum calcium is still controversial.

Method: These was an analytical observational study with cross sectional research design. The vitamin D examination instrument uses the ELFA method (enzyme linked fluorescent assay) with the Vidas instrument from bioMerieux. Samples were collected during June - August 2018 from Inpatient and Outpatient Clinics. The samples were divided into 2 groups, namely a new diagnosis of epilepsy and 6 months after therapy. Each group was measured for vitamin D and serum calcium levels and then the relationship between the two parameters was assessed.

Results: From the 19 new diagnosis of epilepsy, there were 57.9% low vitamin D and 10.5% low calcium levels. From the 20 subjects 6 months after therapy, 70% low vitamin D and 25% low calcium levels.

Discussion: Low vitamin D and low calcium levels were found more in the anti-epilepsy therapy group ≥6 months than the new diagnosis group of epilepsy. Low vitamin D levels can be caused by the use of long-term antiepileptic drugs that will affect serum calcium levels.

Conclusion: This study showed a significant relationship between vitamin D and serum calcium levels in patients with newly diagnosed epilepsy and 6 months after therapy.

Key words: Vitamin D, calcium, epilepsy, ELFA.

Thyroid Crisis and Sepsis in First Trimester of Pregnancy

Mahmudah Hidayati1, Banundari Rachmawati2
1Clinical Pathology Subspecialist Program, Faculty of Medicine, Diponegoro University, Semarang
2Department of Clinical Pathology, Faculty of Medicine, Diponegoro University, Semarang

Background: A normal pregnancy with physiological and hormonal changes can change thyroid function, accordingly there are difficulties to establish the diagnosis of thyroid abnormality. The prevalence of hyperthyroidism in pregnancy is 0.6%. Approximately 1-2% of hyperthyroidism develops into a thyroid crisis. Knowledge of the diagnosis of thyroid crisis in pregnant women is very important to avoid complication.

Case Description: The 22-year-old woman of 13 weeks presented with vomiting, since two days before hospitalized, weakness and decreased consciousness. During treatment for patients had diarrhea, melena and irritable. Physical examination found blood pressure of 136/112 mmHg, pulse of 110 times/m, respiration of 24 times/minute, and temperature of 38.3°C. Exophthalmus in the patient’s eyes, but there is no enlargement of the thyroid and the patient often scream hysterically. Routine urine examination found proteinuria 3+, blood 3+, leukocytes +, FT4 35.18 pmol/ L and TSHs <0.05 ulU / ml, venous leukocytes 15.2x103 / ul, SGOT 122 U / L, SGPT 160 U / L.

Conclusion: The final diagnosis of this patient is the thyroid crisis and sepsis in the first trimester of pregnancy. Thyroid Receptor Antibody (TRAb) examination should be done to assure between Graves disease and hyperthyroidism due to pregnancy (transient hyperthyroidism).

Keywords: Pregnancy, Hyperthyroidism, Thyroid crisis, Sepsis

Oval fat bodies in urine sediment of pregnant women with nephrotic syndrome

Dwi Ayeng Roosanti1, M. Robiul Fuadi2
1Clinical Pathology Specialization Program Faculty of Medicine Airlangga University, Dr. Soetomo Hospital, Surabaya, Indonesia
2Department of Clinical Pathology, Faculty of Medicine Airlangga University, Dr. Soetomo Hospital, Surabaya, Indonesia

Background: Oval Fat Bodies (OFB) in urine sediment are one of the markers of lipuria and are tubular epithelial cells that underwent fat degeneration, or can also be monocytes/macrophages that contain fat droplets/foam cells. OFB are abnormal cells and should not be found in urine sediment. The presence of OFB in the urine indicates disorders of kidneys especially in the glomerulus.

Case Description: A 22-year-old woman at 32 weeks gestation with complaints of swelling in the face, vulva and both lower extremities since 15 weeks of gestation. Vaginal bleeding was currently available one day before admittance. Physical examination: weak, conjunctiva anemia, BP 150/100 mmHg, Abdomen Fundal Height 22cm, edema of both lower limbs. Laboratory tests: anemia, leukocytosis, hypoalbuminemia, hyperlipidemia, urine erythrocytes +2, urine protein +4, urine sediment OFB (+), protein excretion 3.8 gr/24h. Ultrasonography showed mild bilateral parenchymal kidney disease, collection of splenorenal fluid.

Conclusion: OFB is defined as an epithelial tubule containing fat droplets. Fat droplets can originate from glomerular filtration that enter tubule cells through reabsorption. It can also be caused by tubule epithelium that underwent fat degeneration. Sudan III staining in the urine will cause orange color of triglyceride droplets, while cholesterol droplets can be detected clearly by using polarization/contrast phase microscopy, seen as a maltese cross. OFB is a sign of nephrotic syndrome which can detect kidney disorders and the amount can increase. OFB can be detected in urine sediment using light microscope and to clarify the existence of OFB phase contrast microscope can be used.

Keywords: Oval Fat Bodies, Nephrotic Syndrome, Proteinuria, Pregnancy
Analysis of serum albumin levels in pre and post hemodialysis chronic renal failure patients

Marini Kala Tanan1, Fitriani Mangarengi2, Mutmainnah3
1Medical Doctor Specialist Education Program of Clinical Pathology, Faculty of Medicine, Hasanuddin University/ Dr Wahidin Sudirohusodo Hospital, Makassar
2Department of Clinical Pathology, Faculty of Medicine, Hasanuddin University/ Syech Yusuf Hospital, Gowa
3Department of Clinical Pathology, Faculty of Medicine, Hasanuddin University/ Dr.WahidinSudirohusodo Hospital, Makassar

Background : Chronic renal failure (CRF) is a clinical syndrome caused by a chronic decrease and progressive progression in kidney function. Management of CRF patients is done with renal replacement therapy, one of which is hemodialysis. One of the complications of CRF can cause hypoalbuminemia. Hemodialysis can also cause hypoalbuminemia associated with inflammation and malnutrition and loss of protein during dialysis. This study aims to analyze albumin levels in pre and post hemodialysis CRF patients in Dr.Wahidin Sudirohusodo Hospital, Makassar.

Method: This study was retrospective study with cross sectional study design using secondary data obtained from medical record data of pre and post hemodialysis serum albumin levels of CRF patients at the Medical Record Installation at Dr. Wahidin Sudirohusodo from September 2017 - September 2018.

Results: The subjects studied were 50 CRF patients who underwent hemodialysis with a sample characteristic of consist of 26 men (52%) and 24 women (48%). Subject age ranges from 17-72 years with a mean of 49 years. In pre hemodialysis it was found that the mean serum albumin level was 3.07 g / dL while in post hemodialysis it was found that serum albumin levels were 3.05 g / dL. There was a decrease post hemodialysis albumin levels as much 0.02 g/dL but with the Paired-t test, no significant differences were found between pre-post hemodialysis albumin levels in CRF patients (p = 0.665).

Conclusion: There was no significant differences between serum albumin levels pre and post hemodialysis in patients with chronic renal failure.

Keywords: Albumin, chronic renal failure, hemodialysis

Description of castelli’s risk index-1 on acute coronary syndrome patient in Dr. M. Djamil Hospital Padang

Sabebegn, Eka Musmita M1, Yaswir, Rismwati2, Efrida3
1 Clinical Pathology Specialist Program, Faculty of Medicine, Andalas University/ Dr. M.Djamil Hospital, Padang
2 Department of Clinical Pathology, Faculty of Medicine, Andalas University/ Dr. M.Djamil Hospital, Padang

Introduction: Atherogenic dyslipidemia is one of the risk factors for acute coronary syndrome (ACS). Castelli’s risk index-1 (CRI-1) is one of which risk marker for ACS. Castelli’s risk index-1 is the ratio of total cholesterol and HDL cholesterol. The test is cheap and easy to do in the hospital setting. The aim of this study was to describe CRI-1 in ACS patients in Dr. M. Djamil Padang Hospital.

Method: This descriptive study was carried out in the central laboratory and the Cardio Vascular Care Unit (CVCU) of Dr. M. Djamil Hospital Padang from September 2017 to September 2018. The population are all SKA patients who have been diagnosed by the clinician. The sample are part of the population that meet the inclusion and exclusion criteria. Colorimetric enzymatic method using automated clinical chemistry used to meizure total cholesterol and HDL cholesterol. This study used CRI-1> 4. Data is presented descriptively in a frequency distribution table.

Results: Seventy ACS patient consisting of 50 (71.43%) males and 20 (28.57%) females, with median age of 60.1 (8.93) years old. The median total cholesterol and HDL cholesterol levels were 178.66 (46.84) mg / dL respectively and 35.71 (10.86) mg / dL. CRI-1 mean is 5.43 (2.27). 81.43% CRI-1 subject result were more than four.

Conclusion: The low levels of HDL cholesterol and within normal median total cholesterol level made CRI-1 value increased.

Keywords: Acute coronary syndrome, Castelli’s risk index-1

Turnaround time of referral blood service at Dr. Wahidin sudrohusodo hospital’s blood bank before and after implementation of blood information management system

Erika Rosaria Simbolon1, Rachmawati Muhiddin2, Mansyur Arif2
1Clinical Pathology Specialist Program, Hasanuddin University, Dr. Wahidin Sudirohusodo Hospital, Makassar.
2Clinical Pathology Department, Hasanuddin University, Dr. Wahidin Sudirohusodo Hospital, Makassar.

Background: Blood Information Management System or SIMERAH is the system information which allows blood bank officers at Dr. Wahidin Sudirohusodo hospital to check blood supply in Blood Transfusion Unit. Before SIMERAH implementation, referral blood service is done by directly giving the patient’s family a blood request form to PMI without blood supply information. Referral blood service after SIMERAH implementation requires blood bank officers to order blood before referring patients to PMI. The aim of this study is to compare Turnaround Time (TAT) of referral blood before and after SIMERAH implementation.

Methods: The population of this study has been all patients receiving referral blood service to PMI since January 2017 to June 2017 (before SIMERAH implementation) and January 2018 to June 2018 (after SIMERAH implementation). Statistical analysis were descriptive statistical calculation and paired t-test statistical test.

Results: The average TAT at Dr. WahidinSudirohusodo Hospital’s Blood Bank before SIMERAH implementation was 6,10 hours. The average TAT after SIMERAH implementation was 4,37 hours. There was 25.2 % decrease of average TAT after SIMERAH implementation at Dr. WahidinSudirohusodo Hospital’s Blood Bank. There were significant decrease of TAT in January, February, March, May, and June (p<0.05). There was decrease of TAT in April but not statistically significant (p=0.05).

Conclusion: SIMERAH was succeed to decrease TAT in Dr. Wahidin Sudirohusodo Hospital’s Blood Bank.

Keywords: TAT, SIMERAH, PMI