Clinical presentation and outcome of perforated peptic ulcer patients at Dr. Soetomo Hospital Surabaya, Indonesia

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ABSTRACT

Background: Perforated peptic ulcer often occurs in peptic ulcer disease. Identifying the clinical presentation before any operation is important to predict mortality and decision-making about management perforated peptic ulcers. Until to date, there is no report data of perforated peptic ulcer characteristics at Dr Soetomo Hospital Surabaya.

Methods: This is a non-experimental study with descriptive retrospective design. Data were collected retrospectively from medical records all consecutive patients with diagnosis of perforated peptic ulcer at Dr. Soetomo Hospital 2020 - 2022.

Results: For three years, 97 patients were treated with perforated peptic ulcers with a high mortality of 48.5%. Patients were 67% male and 33% female with an average age of 61.4 ± 12.1 years old. There are two options for source control management: external drainage in patients with a Boey score of 3 with a mortality rate of 78.9% and definitive laparotomy repair perforation with a mortality rate of 28.8%. Patients with hemodynamic instability and sepsis have a high mortality rate. The most comorbid patients with perforated peptic ulcer are peripheral vascular disease, endocrine disorders, and lung disease.

Conclusion: Patients with perforated peptic ulcers at Dr. Soetomo Hospital have a high mortality rate. Treatment can be in the form of definitive surgery and external drainage. However, external drainage has a high mortality rate.

Keywords: peptic ulcer, perforation, outcome, mortality.

INTRODUCTION

Peptic ulcer perforation is a clinical presentation that often occurs in peptic ulcer disease. The development of ulceration in the stomach and duodenum involves a complex inflammatory pathway that induces degeneration of the gastric mucosa. The perforated peptic ulcer will increase the risk of morbidity and mortality peptic ulcer disease. Peptic ulcer disease affects 4 million people worldwide annually, the incidence of has been estimated at around 1.5% to 3%. In Indonesia, the prevalence of peptic ulcer ranges from 6-15%, perforated peptic ulcer ranks 10th as the cause of death in men aged 45-54 years.

A perforated peptic ulcer is a surgical emergency associated with a high mortality if left untreated. In general the management of peptic ulcer perforation due to peptic ulcer is divided into non-operative (medical and percutaneous drainage) and operative management. Complications following emergency surgery for perforated peptic ulcer (Intra-abdominal abscess and leak) range between 21 and 43%. Mortality in others series was 7.2% and is comparable to a large series from Korea’s 6.3% mortality rate.

The high mortality rate is the background of this study to look for clinical presentations, which is no report data of perforated peptic ulcer characteristic at Dr. Soetomo Hospital Surabaya.

METHODS

This research is a non-experimental study with descriptive retrospective design conducted at Dr. Soetomo General Hospital. We examined a total of 97 patients’ medical records with perforated peptic ulcers between 2020 and 2022 based on inclusion and exclusion criteria (total sampling). Patients could be followed during treatment or up to 30 days after surgery by evaluating clinic medical records or contacting the subject. Followed up to 30 days is a gold standard indicative of overall quality of care mortality. A patient is considered “mortality” if he dies during hospitalization after undergoing any source control operation due to. Patients are treated alive if the treatment exceeds 30 days or the patient is discharged from the hospital in an improved or cured condition and can be followed.

RESULTS

This study found 97 cases of peptic ulcer treated consisting of 65 men (65/97; 67%) and 32 women (32/97; 33%). The average age of the research subjects was 61.4 ± 12.133 years, the youngest was 20 years old and the oldest was 89 years. During treatment and followed up to 30 days after surgery, a total of 50 patients (51.5%) survived and 47 patients died (48.5%) (Table 1).

Comorbid disease data in this study was based on anamnesis, physical examination, and examination when the patient was diagnosed with perforated peptic ulcer. The most common comorbid conditions were hypertension (30.5%), diabetes mellitus (12.5%), chronic obstructive pulmonary disease (7.5%), and kidney failure (7.5%).

Table 1: Comorbid disease data in this study

<table>
<thead>
<tr>
<th>Condition</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypertension</td>
<td>29 (30.5%)</td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td>12 (12.5%)</td>
</tr>
<tr>
<td>Chronic obstructive pulmonary disease</td>
<td>7 (7.5%)</td>
</tr>
<tr>
<td>Kidney failure</td>
<td>7 (7.5%)</td>
</tr>
</tbody>
</table>

The mortality rate was highest in patients with hemodynamic instability and sepsis (78.9%). Patients with a Boey score of 3 had a higher mortality rate (78.9%) compared to patients with a Boey score of 1-2 (28.8%). The treatment options for perforated peptic ulcer are external drainage and definitive laparotomy. External drainage is preferred in patients with a Boey score of 3 with a mortality rate of 78.9%. Definitive laparotomy is recommended for patients with hemodynamic instability and sepsis with a mortality rate of 28.8%.

Conclusion: Patients with perforated peptic ulcers at Dr. Soetomo Hospital have a high mortality rate. Treatment can be in the form of definitive surgery and external drainage. However, external drainage has a high mortality rate.
diseases were peripheral vascular disease in 29 patients (29.9%) followed by diabetes mellitus, chronic lung disease and heart disease in 8 patients each. In this study, there were no patients with cancer comorbidities (Table 2).

Examination of vital signs in this study was carried out when the patient was first diagnosed with perforated peptic ulcer taken from medical records. Pulses are grouped into three based on tachycardia >100 beats/minute, normal 60-100 beats/minute, and bradycardia <60 beats/minute. Systolic blood pressure is divided into 2 categories, namely <100 mmHg and ≥100 mmHg. Temperature is grouped into 3 based on hypothermia <36.5, normal 36.5 – 37.5, and hyperthermia temperature >37.5 (Table 3).

In this study, source control measures were classified into 2 categories according to the operational definition of the research. Definitive procedures (repair perforation) will require a longer operating time and external drainage procedures performed with local anesthesia require 30 minutes. Patients who underwent external drainage had mortality rate of 30 out of 38 patients (78.9%) who underwent external drainage. In contrast, patients who underwent definitive surgery had a lower mortality rate, 17 patients out of 59 patients (28.8%) who underwent definitive surgery. The time to get the action varies in groups into 2 categories, ≤24 hours for 20 patients (20.6%) and >24 hours for 77 patients (79.4%). The longer the source control action is carried out, the mortality rate will increase (Table 4).

**DISCUSSION**

During 2020-2022 (3-year period), this study obtained peptic ulcer cases of 97 patients treated by the General Surgery Department at the Hospital Dr. Soetomo Surabaya. During treatment and followed up to 30 days after surgery, a total of 50 patients (51.5%) survived and 47 patients died (48.5%). The high mortality rate is a matter of concern, 67% more men than 33% women, this is related to the female hormone estrogen which has protection for the gastric mucosa by increasing bicarbonate levels.

So the incidence of peptic ulcer perforation is lower in women. The average age of the study subjects was 61.4 ± 12.133 years, the youngest was 20 years old and the oldest was 89 years. This is because with increasing age there is an increase in the incidence of degenerative diseases that require treatment with non steroid anti-inflammatory drugs (NSAIDs), where this treatment is known to be the cause of the incidence of peptic ulcer perforation.7

Examination of vital signs in this study...
was carried out when the patient was first diagnosed with perforated peptic ulcer taken from medical records. In this study, the systolic blood pressure of patients in a state of shock with systolic blood pressure <100 mmHg had a higher mortality rate. Research conducted by Venkatesan et al. conducted a study on 251,567 adult patients who underwent non-cardiac elective surgery found that a decrease in systolic blood pressure significantly increased 30-day postoperative mortality, especially in the elderly patient group.8 Systolic blood pressure is one indicator to assess the occurrence of sepsis shock or not. The diagnosis of sepsis shock is established if sepsis is accompanied by hypotension requiring vasoressors to achieve a target mean arterial pressure (MAP) of 65 mmHg or more and serum lactate of more than 2 mmol/L requiring fluid resuscitation.9 In addition, resuscitation fluids are given because shock patients will increase tissue edema which inhibits oxygen metabolism in tissues, so giving excessive fluids in resuscitation increases patient death, besides that the early goal-directed therapy (EGDT) program provides more fluids and costs more expensive treatment. Fluid resuscitation in intra-abdominal infections and surgical trauma can also increase tissue exudation in the abdominal cavity, thus causing abdominal hypertension or even causing compartment syndrome in severe cases, eventually causing reduced abdominal organ perfusion.10

In this study, source control measures were classified into 2 categories according to the operational definition of the research. Definitive and complex source control procedures will require a longer operating time, while external drainage procedures performed with local anesthesia require a shorter time. Patients with definitive action were treated in 59 (60.8%) subjects with a success rate of 71.1%. Meanwhile, there were 38 (39.2%) subjects who underwent external drainage with a lower success rate of 30%. The choice of this action is based on the patient's condition upon arrival at the hospital. Patients with a Boey score of 3 are patients who have very high surgical risks such as the onset of perforation for more than 24 hours, a history of shock and comorbidities that are owned by the patients in this study who underwent external drainage measures, while patients with a boey score <3 underwent laparotomy surgery with general anesthesia. Because of this subject's selection, external drainage measures have a low success rate.

The success of the non-operative management (NOM) method with external drainage is because it can reduce the burden or stress caused by surgery. Surgery actually puts an excessive burden on the patient's body with a Boey score of 3 by suppressing organ function which had actually been reduced prior to surgery. External drainage is aimed at source control and intraperitoneal lavage, and has better outcomes in patients with perforated peptic ulcer who are at high risk or a Boey score of 3. Studies have shown that approximately 40%-80% of gastric perforations due to peptic ulcers will close spontaneously with conservative management. Referring to the study population of Boey et al., patients aged 49 years or younger had a better success rate than those over 49 years of age. This is associated with faster mucosal healing at a young age compared to old age.11 So the selection of external drainage in cases of peptic ulcer perforation in old age needs to be reconsidered. In addition to pre-operative factors, post-external drainage factors also have an important role, namely related to patient care, facilities and human resources, as well as decisions to determine whether external drainage is successful or it is necessary to perform definitive surgery with exploratory laparotomy, due to exploratory laparotomy and omental patch repair as the gold standard for peptic ulcer perforation or gastroctomy for large ulcers (giant perforation) can also be performed.2

In this study, the time until surgery (including external drainage) explained that patients who had source control for more than 24 hours would have a greater risk of mortality compared to those who had source control for <24 hours. This is the same as other studies which state that there is a significant relationship between time to surgery and mortality in complicated intraabdominal infection (CIAI) patients. A long time will increase exposure to sources of infection and will increase the risk of sepsis.12 In another study conducted by Luo, it was reported that the time to get surgery did not have a significant relationship with the incidence of mortality in CIAI patients.10 For patients who are critically ill and cannot tolerate major surgery, percutaneous drainage is more considered to be performed. Surgeons need to decide the time of operation and the type of procedure according to the patient's condition and prognosis. In addition EGDT which is a 6-hour resuscitation program for sepsis patients, is included in the guideline of surviving sepsis campaign.13 After three studies, it has consistently shown that EGDT does not reduce the mortality of patients with sepsis if compared to conventional treatment programs.14

CONCLUSION
Patients with perforated peptic ulcer at Dr Soetomo Hospital have a high mortality rate. Treatment can be in the form of definitive surgery and external drainage. However, external drainage has a high mortality rate. So it requires several considerations before taking source control actions

CONFLICTS OF INTEREST
No competing interests were declared.

ETHICAL CLEARANCE
This study was reviewed and approved by the Medical Ethical Committee of Dr. Soetomo General Hospital, Surabaya, Indonesia (Ref. No.: 1262/LOE/301.4.2/III/2023) following the guidelines of The Office for Human Research Protection (OHRP) the US Departement of Health and Human Services (HHS)

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AUTHOR CONTRIBUTION
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REFERENCE


