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Profile of sinonasal malignant tumor patients in Adam Malik General Hospital Medan-Indonesia



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ABSTRACT

Introduction: Malignancy of nose and paranasal sinuses (sinonasal) is 3% of head and neck malignancies, in which etiology is not known, and the prognosis is poor.

Methods: This study is a descriptive case series. Samples were taken by purposive sampling method, in which all of the sinonasal malignant tumor patients (inpatient and outpatient) in Otolaryngology Department of Adam Malik General Hospital in 2010 – 2015 were recruited.

Results: Nose blockage was the most common symptom (53.6%). The symptoms existed for less than six months (50.9%). Most of the tumor was located in maxillary sinus (70.5%) and was an

epithelial tumor (94.6), particularly non-keratinizing squamous cell carcinoma type (47.3%). Most of the tumor graded as T4 (34.8), and most of the lymph nodes involved graded as N0 (83.9%). Tumors treated with surgery mostly by medial maxillectomy method (41.4%).

Conclusions: Sinonasal malignant tumor patients in Adam Malik General Hospital, Medan, were mostly had nasal blockage symptom for less than six months. They mostly had maxillary sinus in origin, was an epithelial tumor with non-keratinizing squamous cell carcinoma type, T4 of tumor size, N0 of nodal involvement, and had a medial maxillectomy method in their surgeries.

Keywords: sinonasal; malignant tumor; descriptive; oncology; Adam Malik General Hospital

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INTRODUCTION

Nasal and paranasal sinuses (sinonasal) malignancy is a rare tumor, which comprised only 1% of all malignancies in the human body and 3% of malignancies in head and neck area. Paranasal sinuses were hidden cavities under the skull that cannot be detected by routine physical examination; diseases in this organ were commonly asymptomatic in early course.¹

The highest incidence of sinonasal malignancy found in Japan (2 per 10,000 people per year). In otolaryngology department of Indonesia University, this malignancy was noted in 10 – 15% of all Otolaryngology malignant tumors. Male and female ratio of patients was 2:1.²

The etiology of the sinonasal malignant tumor is not known. Several epidemiology studies stated that the association between the high incidence of the sinonasal malignant tumor and carcinogenic chemicals and sawdust exposure. Higher risk of malignancy also found in chrome pigment and nickel factory workers. It reported that formaldehyde, diisopropyl sulfate, sulfide dichloromethyl, and smoking were another risk factors of this malignancy.³

Symptoms depend on primary origin, direction, and extension of the tumor. Tumor in maxillary sinus commonly was asymptomatic. Symptoms were noted after the tumor was big, pressing and

penetrating bones to the nasal cavity, oral cavity, maxilla, orbits, or intracranial. Duration of symptoms was varied between weeks to five months.^{2,4}

The prognosis of this malignancy was often poor, and there was no significant improvement in the last three decades. Histopathology examination was the key to diagnosis and one of the factors that influence therapy and prognosis.⁵

It is important to describe the patient's profile to define the risk factors of malignant sinonasal tumor. This study aimed to describe malignant sinonasal tumor patients in Otolaryngology Department of Adam Malik Hospital in 2010 – 2015.

METHODS

This study is a descriptive case series. Samples were taken by purposive sampling method, in which all of the sinonasal malignant tumor patients (inpatient and outpatient) in Otolaryngology Department of Adam Malik General Hospital in 2010 – 2015 were recruited.

Data were extracted secondarily from medical records. Tested variables in this study were: sex, age, ethnic group, symptoms, duration of symptoms, Otolaryngology examination, tumor location in CT scan, histopathology report, tumor size, nodal involvement and its size, and the operation technique. All data were analyzed and presented in the frequency table.

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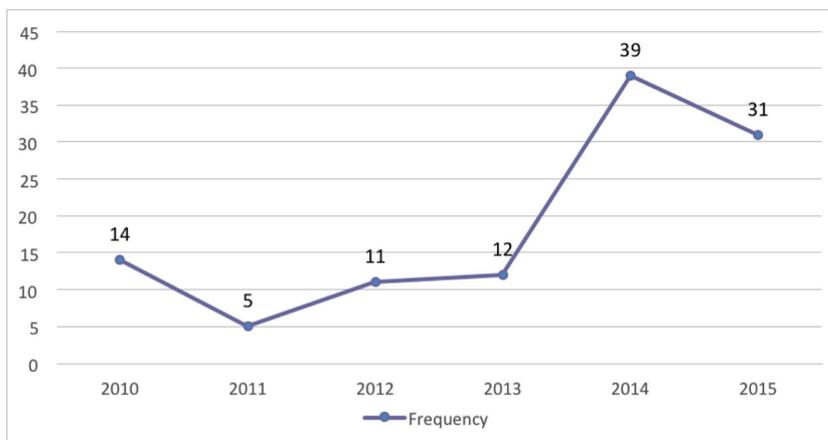


Figure 1 Sinonasal malignant tumor incidence, Adam Malik General Hospital, 2010 – 2015

Table 1 Subjects characteristics

Profile	N	%
Age, years old		
< 20	10	8,9
20 – 30	7	6,3
31 – 40	10	8,9
41 – 50	31	27,7
51 – 60	30	26,8
> 60	24	21,4
Sex		
Male	56	50,0
Female	56	50,0
Ethnic group		
Aceh	20	17,9
Batak	46	41,1
Jawa	29	25,9
Melayu	8	7,1
Karo	7	6,3
Padang	2	1,8
TOTAL	112	100

Table 2 Main symptoms, duration of symptoms, and Otolaryngology findings

Profile	N	%
Main symptoms		
Nasal blockage	60	53,6
Maxillary mass	34	30,4
Periorbital mass	1	0,9
Nosebleed	17	15,2
Duration of symptoms, months		
< 6	57	50,9
6 – 12	24	21,4
> 12	31	27,7
Otolaryngology findings		
Anterior rhinoscopy		
Mass in nasal cavity	98	87,5
No mass in nasal cavity	14	12,5
Oropharynx		
Palatal shift	16	14,3
No palatal shift	96	85,7
TOTAL	112	100

RESULTS

There were 112 samples fulfilled the sample criteria. Sinonasal malignant tumor incidence was found highest in 2014 (39 patients) and lowest in 2011 (5 patients), [Figure 1](#). Subjects characteristic was presented in [Table 1](#).

DISCUSSIONS

This study showed that malignant tumor patients were found equally in male and female (1:1). A study by Turner et al. in US, 2011, with 6,739 sinonasal malignant tumor patients in 1973 – 2006 reported a higher incidence in male (58.3%). Another study by Poursadegh in Iran, 2015, stated that incidence in male was 1.8 times more frequent than female.⁷ There was no theory explaining the different disease course in male and female. The accepted explanation was the higher carcinogenic exposure in male.¹

We found that the highest incidence of the sinonasal malignant tumor was in 41–50 years old (31 subjects, 27.7%). Turner et al., 2011, reported the peak age of patients as 55 – 69 years old (42.1%). Another study by d'Errico reported that 60 – 69 years old as the highest age group of patients. Age was a risk factor for sinonasal malignant tumor, in which older age was associated with higher incidence. However, the incidence was also influenced by duration of carcinogenic exposure.⁶

Based on ethnic group, we found Batak people had the highest incidence (46 subjects, 41.4%). This was reasonable since the majority of the population in Medan was Batak of origin.

The most common symptom of the sinonasal malignant tumor was a nasal blockage (60 patients, 53.6%). The similar result reported by Mahalingappa,⁸ who reported nasal blockage as the most common symptom in 15% of their subjects. A different result was reported by Porsadegh⁷ who stated that face swelling was the most common symptom (66.6%). Patients' subjectivity caused the different report in symptoms reporting, in which symptoms of the sinonasal malignant tumor were originally unspecific and similar to other pathology in the sinonasal area.

In our study, most of our patients had symptoms less than six months (57 subjects, 50.9%), followed by more than 12 months (31 subjects, 27.7%), and 6 – 12 months (24 subjects, 21.4%). There was no current report regarding the distribution of symptom duration in the sinonasal malignant tumor. We concluded that the disturbing symptoms encourage patients to seek medical advice, causing relatively short symptom duration reported.

In this study, the most common distribution of local tumor and its spread based on CT finding was

Table 3 Tumor histologic type

Histologic type	N	%
Epithelial Tumor		
SCC	15	13,4
Keratinizing SCC	12	10,7
Non-keratinizing SCC	53	47,3
Adenoid cyst carcinoma	12	10,7
Adenocarcinoma	8	7,1
Undifferentiated Carcinoma	6	5,4
Total epithelial tumor	106	94,6
Non-Epithelial Tumor		
Olfactory neuroblastoma	2	1,8
Fibrosarcoma	2	1,8
Malignant fibrous histiocytoma	1	0,9
NHL	1	0,9
Total non-epithelial tumor	6	5,4
TOTAL	112	100

Table 4 Tumor size, lymph node size, and surgical technique

Profile	N	%
Tumor size		
T 1	7	6,3
T 2	33	29,5
T 3	33	29,5
T 4	39	34,8
Lymph node size		
N 0	94	83,9
N 1	12	10,7
N 2	6	5,4
N 3	-	-
Surgery technique		
Maxillectomy inferior	1	0,9
Maxillectomy media	46	41,1
Maxillectomy media +Maxillectomy inferior	3	2,7
Maxillectomy media + Maxillectomy superior	4	3,6
Total Maxillectomy	6	5,4
Not operated	52	46
TOTAL	112	100

maxillary sinus (79 patients, 70.5%). The same finding was reported by Poursdegh, ⁷ in which maxillary sinus was the most common primary tumor location (78.3%). Several studies stated different result; Mahalingappa, ⁸ reported nasal cavity as the main location (57%), followed by maxillary sinus (27%). Turner et al., 2011, also agreed on the nasal cavity as the main location (43.9%) and maxillary sinus as the second (35.9%).

Otolaryngology examination by anterior rhinoscopy or nasendoscopy found expanding mass to the nasal cavity in 98 patients (87.5%). In oropharynx examination, the palatal shift found in 16 patients (14.3%). Physical finding depends on tumor primary location and size.

Histopathologically, epithelial tumor comprised most of the proportion, which was found in 106 patients (94.6%); the rest of 47.3% was non-keratinizing squamous cell carcinoma type. The non-epithelial tumor was found in 6 patients (5.4%), which were consisted mostly of 12 patients (10.7%) fibrosarcoma and 12 patients of (10.7%) of olfactory neuroblastoma. The similar result was reported by Poursadegh, 2015, who stated that SCC was the most common type (40.6%), followed by adenoid cyst carcinoma (11.6%).

Mahalingappa⁸ reported that SCC was the most common histologic type (50%), followed by melanoma malignant (27%). Turner in 2011 also reported SCC as the most common type (51.6%), followed by adenocarcinoma (12.6%). Llorente⁹ reported 50% of their subjects had SCC type, followed by adenocarcinoma, intestinal type (13%).

Sinonasal cavities lined with pseudostratified epithelia, tapered to olfactory pseudostratified epithelia at the top of the nasal cavity. Goblet cell and secretory sub-mucous gland between those glands will produce mucus to entrap foreign bodies. Differentiation of these epithelial cells was potential to be metaplasia, in which some of them could be malignant. The high incidence of non-keratinizing SCC type associated with the dominant histologic type in the sinonasal cavity.⁹

Most of the tumor we found sized T4 (39 patients, 34.8%) and most of the lymph node was N0 (94 patients, 83.9%). Mahalingappa⁸ reported that most of their sinonasal malignant tumor patients were in stage IV (50%); stage I patients was only found in 13%. Unspecific symptoms of the sinonasal malignant tumor were the reason of misdiagnosis and under appreciation. Patients commonly seek medical treatment if they had severe symptoms caused by enlarging tumor.

Surgery for sinonasal malignant tumor was mostly done by medial maxillectomy (46 patients, 41.4%). Farag¹⁰ had analyzed several surgical techniques for sinonasal malignancy. In his study, he concluded that each technique has its benefit and disadvantage. Medial maxillectomy is a technique with minimal side effects, but the limited vision field is a disadvantage for the operator.

CONCLUSIONS

Majority of sinonasal malignancy patients were aged 41 – 50 years old, had an equal ratio of male and female. The most patients are Batak origin had nasal blockage symptom for less than six months, maxillary sinus in origin, was an epithelial tumor with non-keratinizing squamous cell carcinoma type (particularly fibrosarcoma and neuroblastoma

olfactory), T4 of tumor size, N0 of nodal involvement, and had a medial maxillectomy method in their surgeries. This data could contribute to further studies regarding sinonasal malignancy.

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