

Chronic rhinosinusitis patient with nasal polyps at Dr. Soetomo General Academic Hospital Center



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ABSTRACT

Background: Nasal polyps are benign chronic inflammatory masses with epithelial tissues of the nasal mucosa and paranasal sinuses. The clinical diagnosis is made based on sinonasal symptoms for more than three months and the presence of polyps in the nasal cavity. The classification of nasal polyps based on the histopathological structure is divided into three types, i.e., oedematous, eosinophilic polyps, inflammatory polyps, and chronic seromucous inflammatory polyps. This study aims to describe the profile of patients with nasal polyps at Dr. Soetomo Public Hospital Surabaya.

Methods: This study applied a descriptive method with a retrospective approach by obtaining data from the medical records of the outpatient unit in the Ear, Nose, Throat, and Head-Neck (ENT-HN) Department of Dr. Soetomo Public Hospital Surabaya for the period January 2017-December 2018 based on age, gender, clinical symptoms, symptoms duration, polyp types, location of nasal polyp, and comorbidities.

Results: The number of patients with nasal polyps was slightly more in women, as many as 13 patients or 52%, mostly aged 51-60 years old, amounting to 11 patients or 44%. The most common clinical symptom experienced by patients was nasal obstruction, as many as 24 patients or 96%. Patients who experienced symptom duration for one to three years before treatment amounted to 13 patients or 52%. Patients with histopathology of inflammatory nasal polyps were 19 patients or 76%, while patients of nasal eosinophil polyps were six patients or 24%. Additionally, patients with comorbidity in nasal polyps of allergic rhinitis medical history were 11 patients or 44%. Also, bilateral nasal polyps were mostly experienced by patients, reaching 14 patients or 56%.

Conclusion: This study reveals nasal polyps in women aged 51-60 years with clinical symptoms of nasal obstruction with the results of a histopathological examination of the inflammation type at bilateral polyps.

Keywords: allergy, inflammation types, nasal polyp.

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INTRODUCTION

Nasal polyps are benign chronic inflammatory masses with epithelial tissues of the nasal mucosa and paranasal sinuses. The clinical diagnosis was made on the basis of sinonasal symptoms lasting three months or more and the presence of polyps in both nasal cavities. The classification of nasal polyps based on the histopathological structure is divided into three types, i.e., edematous, eosinophilic polyps, inflammatory polyps, and chronic seromucous inflammatory polyps. Patients with Chronic Rhinosinusitis (CRS) were categorized into two subtypes, i.e., CRS without nasal polyps and CRS with nasal polyps. These two groups of rhinosinusitis differ in the inflammatory and remodeling processes. Thus, it can affect the prognosis, surgical procedures, recurrence, and medical therapy.^{1,2}

Nasal polyps are classified into three types based on the histological structure, namely, edematous, eosinophilic polyps, inflammatory polyps, and chronic seromucous inflammatory polyps.³ A study revealed that eosinophil infiltration was more common in western countries compared to Asian countries. Meanwhile, another study suggested that the inflammation type of nasal polyps was more common in the Asian population. Genetic factors can cause different types of nasal polyps.^{3,4,5}

The result of a study conducted in Malaysia examining 122 CRS patients with nasal polyps in an ethnic group indicated more types of inflammation, reaching 67.2%, compared to eosinophils with 32.8%. A study on CRS patient preparations at Dr. Sardjito General Hospital on the histological examination of tissue (90.47%) indicated that there

were only five cells per field of view on sinonasal tissue containing eosinophils, while it was said to have many eosinophils if twenty-three cells per field of view were identified.^{6,7} This study aims to determine the profile of patients with nasal polyps at Dr. Soetomo Public Hospital Surabaya.

METHODS

This study applies the descriptive method with a retrospective approach by obtaining data from the medical records of the outpatient unit in the ENT-HN Department of Dr. Soetomo Public Hospital Surabaya for the period of January 2017-December 2018. The study was carried out in the Rhinology Division of the Outpatient Unit at the ENT-HN Department of Dr. Soetomo Public Hospital Surabaya. The population covered all patients with nasal polyps who

came to Dr. Soetomo Public Hospital Surabaya. Approval ethic number is 0932/LOE/301.4.2/IV/2022 from committee ethic's Soetomo General hospital center Surabaya, Indonesia. The samples included all patients with nasal polyps who had undergone examination, polyp surgery, and had histopathological results after polyp surgery at the ENT-HN Department of Dr. Soetomo Public Hospital Surabaya for the period of January 2017-December 2018 and met the inclusion and exclusion criteria. The inclusion criteria were patients with nasal polyps who had undergone examination and polyp surgery at the ENT-HN Department of Dr. Soetomo Public Hospital Surabaya for the period of January 2017-December 2018 with complete medical record data, and the exclusion criteria were incomplete medical record data, patients with complications, patients with sinonasal tumors. The technique applied in this study included preparing records based on gender, age, identified signs and symptoms, nasal endoscopy, and histopathological results after polyp surgery. Data processing was carried out manually, arranged in tabular form, and analyzed descriptively without any statistical software analysis used.

RESULTS

The medical record data based on gender, age, clinical symptoms, symptom duration, comorbidities, polyp types, and location of nasal polyps at the ENT-HN Department of Dr. Soetomo Public Hospital Surabaya for the period of January 2017-December 2018 indicated that patients diagnosed with nasal polyps which had undergone polyp surgery and had histopathological results reached 25 out of 32 patients who met the inclusion and exclusion criteria.

A total of 25 patients with nasal polyps consisted of 13 females or 52%, and 12 males or 48%. Most patients were included in the age range of 51-60 years, reaching 11 patients or 44%, with the youngest under ten years of one patient or 4%, while the oldest over 61 years of two patients or 8% (Table 1).

The clinical symptoms of the patients as they came to the hospital included nasal obstruction in 24 patients (96%), runny nose in 19 patients (76%), facial pain in 14 patients (56%), reduced sense of smell in 18

Table 1. Distribution of patients with nasal polyps based on gender and age.

Distribution	Total	%
Gender		
Male	12	48
Female	13	52
Total	25	100
Age (year)		
≤ 10	1	4
11-20	3	12
21-30	5	20
31-40	2	8
41-50	1	4
51-60	11	44
≥61	2	8
Total	25	100

Table 2. Distribution of nasal polyps patients based on clinical symptoms, symptom duration, and comorbidities.

Distribution	Total	%
Clinical Symptom		
Nasal obstruction	24	96
Runny nose	19	76
Facial pain	14	56
Reduced sense of smell	18	72
Cough	2	8
Symptom Duration		
< 1 year	10	40
1-3 years	13	52
3-6 years	2	8
Comorbidity		
Allergy History	11	44
LPR	10	40
Asthma	1	4

Table 3. Distribution of nasal polyp patients based on the location and histopathological findings.

Distribution	Total	%
Location		
Unilateral	11	44
Bilateral	14	56
Histopathology		
Eosinophils	6	24
Inflammation	19	76

patients (72%), and cough in two patients (8%). The symptoms occurred before treatment and mostly lasted for one to three years. Comorbidities of nasal polyps patients included allergies history with 11 patients (44%), Laryngopharyngeal Reflux (LPR) with ten patients (40%), and asthma

with one patient (4%) (Table 2).

In this study, based on location distribution, there were 11 patients with unilateral nasal polyps (44%) and 14 patients with bilateral nasal polyps (56%). Additionally, based on histopathological findings, there were six patients with

eosinophil type (24%) and 19 patients with inflammation type (76%) (Table 3).

DISCUSSION

This study involved 25 nasal polyps patients. The patients consisted of 13 women (53%) and 12 men (48%). In Indonesia, a study conducted in Malang in 2014 revealed the opposite result. Nasal polyps occurred in men more than in women, with a ratio of 2-4:1.⁸ Another study stated that of 211 patients with nasal polyps, the percentage of men was 50.2%, while women were 49.8%. These data indicated less incidence of nasal polyps in women than in men, with a ratio of 2.9:6.0, respectively.³ However, nasal polyps patients are not necessarily dominated by men.

Based on the data, the age of nasal polyps patients mostly ranged from 51 to 60 years old with 11 patients (44%), followed by the age range of 21-30 years old with five patients (20%), the age range of 11-20 years old with three patients (12%), the age range of 31-40 years old with two patients (8%), 61 years old and over with two patients (8%), 41-50 years old with one patient (4%), and ten years old and below with one patient (4%). The above results are in accordance with a study reporting that the frequency of nasal polyps reaches its peak in patients aged 50 years old and over. Moreover, people with asthma over the age of 40 are four times more likely to suffer from nasal polyps than those under the age of 40. Larsen *et al.* reported similar results in Denmark, where from a total of 252 patients, nasal polyps were most common in patients aged 40 to 60 years. In addition, patients aged 80+ years were theoretically improbable to have nasal polyps. The mean diagnosed age with nasal polyps was 51 years for men and 49 years for women. In contrast, unilateral antrochoanal polyps were commonly diagnosed at a much younger age (27 years for men and 22 years for women).³ Most patients with nasal polyps are aged 40 to 60 years and must be distinguished from antrochoanal polyps.

This study identified six patients with eosinophilic nasal polyps (24%), with four patients (66.67%) having a history of allergies and two patients (33.33%) having no history of allergies. There were 19

patients (76%) with chronic inflammation type of nasal polyps. Among these patients, seven people (36.84%) were diagnosed with an allergic history, and the other 12 people (63.16%) did not have an allergic history. This study discovered that the number of inflammatory polyps was higher than the eosinophil polyps. This number was in accordance with the literature of Dr. Ramiza from Universiti Sains Malaysia Health Campus, who stated the Caucasian population had a high eosinophil nasal polyp compared to the Asian population, which had a high chronic inflammation type of nasal polyps.⁹ Study from Armengot *et al.*, Garin *et al.*, Snidvons *et al.*, and Couto *et al.* were claimed that the Caucasian population had a dominant type of eosinophil polyp ranging from 73-92.5% of their total sample.⁹ A study conducted at Dr. Sardjito General Hospital discovered that the number of eosinophil tissue of 90.47% of the diagnosed patients was less than five cells per field of view. The polyp tissue did not signify any eosinophil type.⁷ Other literature mentioned that the exact mechanism of nasal polyp formation remains a matter of debate. As a result, the racial and geographical variations emerged as potential modifiers in the pathophysiology of nasal polyps.

In the Caucasian population, nasal polyps were indicated to possess a strong eosinophilic component, possibly due to the upregulation of interleukin-5 (IL-5) in that population.³ In Western populations, an essential finding was discovered, which indicated that nasal polyps were managed by Th2 cells and eosinophils tissue. Activation of eosinophils in the nasal mucosa could result in the secretion of specific granule proteins, the synthesis and release of lipid mediators, inflammatory cytokines, chemokines, and growth factors. Through these chemical mediators, eosinophils contributed to the development of nasal polyps. However, several studies indicated that less than 50% of patients with nasal polyps in China or other Asian countries carry this type of inflammatory polyp.⁴ Patients with eosinophil-type nasal polyps did not always have an allergic history, and patients with chronic inflammatory nasal polyps might have an allergic history.

This study denoted that the most

common clinical symptoms were nasal obstruction detected in 24 patients (96%), followed by the symptoms of runny nose in 19 patients (76%), facial pain in 14 patients (56%), reduced sense of smell in 18 patients (72%), and cough in two patients (8%). These results were in accordance with a study conducted at H. Adam Malik General Hospital Medan in 2009-2011, which explained that 58 of 59 patients had the main symptom of nasal obstruction (98.1%). Besides, As many as 25 patients (42.4%) had an additional symptom of headache.¹⁰ This study was in line with another reference, which stated that the most frequent symptoms of nasal polyps patients were nasal obstruction, hyposmia to anosmia, rhinorrhea, epistaxis, and postnasal drip (PND), headache, and snoring. Nasal obstruction symptoms can vary, from subjective nasal congestion sensations and mechanical pressure due to the occurrence of nasal polyps in the sinus cavity, to complete nasal airway obstruction due to enlarged nasal polyps blocking the nasal cavity.¹¹ In a study conducted in Malang in 2018, a correlation test using Spearman's rank correlation coefficient was performed to discover the correlation between the size of nasal polyps and patient symptoms

The results suggested that the size of nasal polyps was strongly and significantly correlated with nasal obstruction and a reduced sense of smell with a P-value less than 0.05. On the other hand, postnasal drip and headache complaints were weakly and insignificantly correlated with the size of nasal polyps with a P-value greater than 0.05.⁷ Chaitanya's study in India supported the results of this study. His study indicated that nasal obstruction was the most common symptom complained by patients (93.47%). Similarly, Kamal's study in Bangladesh denoted that 100% of polyps patients complained about nasal obstruction. However, the results of those studies were slightly different from Castillo's study in Spain, where the nasal obstruction was the 3rd most common complaint (72.1%) following hyposmia (80.5%) and runny nose or long-lasting cold complaints (77.4%). Advanced communities with relatively high health awareness will have medical visits at an early stage of the disease even though they

have not experienced nasal congestion symptoms.¹⁰ Nasal obstruction and pain were the most common symptoms complained by patients with nasal polyps.

Most patients with nasal polyps complain of long-lasting nasal obstruction, amounting to 16 patients (64%), with the most common duration of symptoms ranging from one to three years, totaling 13 patients (52%), followed by symptoms duration of less than one year, totaling ten patients (40%), and symptoms duration ranging from three to six years, totaling two patients (8%), before visiting the outpatient unit at the ENT-HN Department at Dr. Soetomo Public Hospital Surabaya. These findings are consistent with a study conducted in India regarding symptom duration, where most of the patients, as much as 40%, had symptom duration of one to three years.¹² Besides, it is also in accordance with other references stating that impaired mucociliary clearance and secretion reduction of antimicrobial proteins can lead to exposure to pathogens and non-pathogens as well as raise a chronic inflammatory response.¹³ Chronic rhinosinusitis, which lasts for one to three years, can cause nasal polyps.

Several comorbidities in patients with nasal polyps included allergic rhinitis in 11 patients (44%), Laryngopharyngeal Reflux (LPR) in ten patients (40%), and asthma in one patient (4%). These results were in line with a study conducted in Nepal, denoting that many theories assumed that nasal polyp was caused by chronic rhinosinusitis and sinusitis, characterized by edema and infiltrates. However, in several cases, the initial causes might be different.¹⁴ The similar result was also suggested by a study conducted in Medan, stating that the most common risk factor for nasal polyps was sinusitis with 33 out of 47 patients (70.2%).¹⁵ This study also corresponds to a literature reference indicating that CRS is the most common cause of sinus and nasal lesions that triggers polyp formation. Pathological evaluation is required to differentiate it from other polypoid sinonasal lesions, especially in unilateral cases, and from benign tumors. Cohort studies demonstrated a strong correlation between asthma and the occurrence of nasal polyp formation. In a study with more than 2,000 patients,

Settipane *et al.* reported that nasal polyps were more common in nonallergic asthma patients (13%) than in allergic asthma patients (5%), where the P-value was less than 0.01.³ Almost all patients with nasal polyps experienced sinusitis and might be accompanied by allergic rhinitis or asthma. The limitation of the study was that data collection of the medical history of allergic rhinitis and asthma was only based on anamnesis.

The suggestion from this research is to take more samples based on the year period, and write in full, such as the type of polyp on the anatomical histopathology results.

CONCLUSION

This study covered 25 profiles of patients with nasal polyps at Dr. Soetomo Public Hospital that were dominated by females. In addition, the patient's ages ranged from 51 to 60 years old. The most common clinical symptom experienced by the patients was nasal obstruction. In addition, the patients experienced symptoms lasting for one to three years before their treatment at Dr. Soetomo General Academic Hospital Center. Histopathological examination results suggested that bilateral chronic inflammatory nasal polyp mostly occurred. Meanwhile, the most common comorbidity of nasal polyps patients was a history of allergies. For further studies, it is recommended to carry out allergy and asthma tests.

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CONFLICTS OF INTEREST

The author reports no conflicts of interest in this research.

ETHICAL CLEARANCE

This study has got approval ethic number (0932/LOE/301.4.2/IV/2022) from committee ethic's Soetomo General hospital center Surabaya, Indonesia.

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AUTHOR CONTRIBUTIONS

All authors have the same contribution in writing the report on the results of this study, from the stage of proposal preparation, data search, and data analysis to the interpretation of research data and presentation of the final report.

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