

The Clinical Features of Ostiomeatal Complex in Chronic Maxillary Sinusitis

by Nasoendoscopic Examination

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Abstrak: Lebih dari 90% sinusitis maksila kronis disebabkan oleh variasi anatomi ostiomeatal kompleks. Variasi anatomi ostiomeatal kompleks dapat diketahui dengan pemeriksaan nasoendoskopi. Dengan pemeriksaan ini dapat diketahui kelainan di meatus media dan di bagian anterior hidung. Tujuan penelitian ini adalah untuk mengetahui kelainan di kompleks ostiomeatal pada sinusitis maksila kronis. Empat puluh pasien dengan 67 kelainan sinus maksila diperiksa dengan nasoendoskopi. Penelitian ini dilakukan di Departemen THT Fakultas Kedokteran Universitas Sumatra Utara/RS H. Adam Malik, Medan, Indonesia.

Dari 67 kasus sinusitis maksila, dijumpai 58 sinus (86,6%) kelainan pada kompleks ostiomeatal di antaranya 21 sinus (36,2%) adalah pembesaran bula etmoid, 16 sinus (37,6%) polip pada konka bulosa dan konka paradoksal, 10 sinus (17,3%) kelainan prosesus uncinatus, 7 sinus (12%) polip pada meatus media dan hiatus semilunaris, serta 4 sinus (6,9%) dijumpai deviasi septum.

Kata kunci: sinusitis maksila kronis, kompleks ostiomeatal, pemeriksaan nasoendoskopi

Abstract: More than 90% of chronic maxillary sinusitis are caused by anatomic variation of ostiomeatal complex. The anatomic variation of ostiomeatal complex can be found by using nasoendoscopic examination. Nasoendoscopy reveals the feature of middle meatus and identifies the abnormality anteriorly. The aim of this study was to investigate the abnormality of ostiomeatal complex in patients with chronic maxillary sinusitis. Fourty patients with 67 abnormal maxillary sinus were examined by using nasoendoscope. The study took place in the center of ENT Department, Medicine Faculty, North Sumatera University/H. Adam Malik Hospital, Medan, Indonesia.

Out of 67 cases, 58 sinuses (86.6%) were found with abnormal ostiomeatal complex. Of the 58 sinuses, it was found that 21 sinuses (36.2%) were the enlargement of ethmoid bulla, and 16 (27.6%) were polyps in concha bullosa and concha paradoxal, 10 sinuses (17.3%) were abnormal uncinatate process, 7 sinuses (12%) were polyps in middle meatus and hiatus semilunaris and 4 (6.9%) cases were septal deviation.

Keywords: chronic maxillary sinusitis, ostiomeatal complex, nasoendoscopic examination

INTRODUCTION

Chronic maxillary sinusitis is defined as an inflammation of the maxillary sinus mucosa which is more than 3 months.¹ Lorry describes symptom of chronic maxillary sinusitis as "triad"; nasal obstruction, nasal discharge and facial fullness.² Acute maxillary sinusitis can usually be cured by a prompt medical treatment, but chronic maxillary sinusitis is often difficult to be cured by conservative treatment because of the ostiomeatal complex abnormality.³ The changes in maxillary sinus usually complication of ostiomeatal complex abnormality.⁴ Messerklinger reported that infundibulum and middle meatus were the most common sites influenced by anatomic variation of ostiomeatal complex. Stammberger also describes that more than 90% of this disease are caused by anatomic

variation of ostiomeatal complex.^{5,6,7} The anatomic variation of ostiomeatal complex can be found by using nasoendoscopic examination. Nasoendoscopy reveals the feature of middle meatus and identifies the abnormality anteriorly. Nasoendoscopy is valuable to evaluate concha bullosa, concha paradoxal, nasal mucosal thickening, purulent drainage and small polyp which make chronic obstruction, disruption of ventilation and mucociliary system, subsequently predispose an inflammation of maxillary sinus mucosa.^{8,9}

We performed this study as a cross-sectional study for patients who fulfil the inclusion and exclusion criteria. We wanted to know the anatomic variation of ostiomeatal complex by nasoendoscopic examination which

is the most common cause for chronic maxillary sinusitis.

PATIENTS AND METHODS

This cross-sectional study was performed from February to October 2000 in H. Adam Malik Hospital Medan, involving 40 consecutive out patients with chronic maxillary sinusitis. Sinusitis was judged to be present if the radiographic showed mucosal thickening and either an air-fluid level or complete opacification of the maxillary sinus. Inclusion criteria included minimal age was 15 years old, radiographic showed maxillary sinusitis, informed consent was obtained. Exclusion criteria included prior undergone sinus surgery. Before attempting nasal endoscopy each patient's nasal cavity was anesthetized with pantocain 2% with epinephrine in a swab. It was inserted to nasal cavity below the middle turbinate and lateral wall of nasal cavity. Using a 2.7-mm 30° rigid nasal endoscope, we investigated and assesed the middle meatus and the ostiomeatal complex.

RESULTS

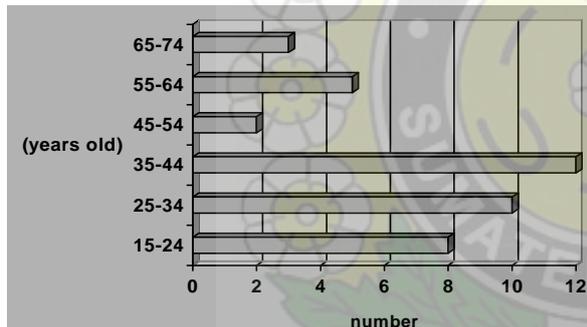


Figure 1. Age distribution

This figure shows that the most common age distribution is between 35 – 44 years old. The mean age is 38.3 years old.

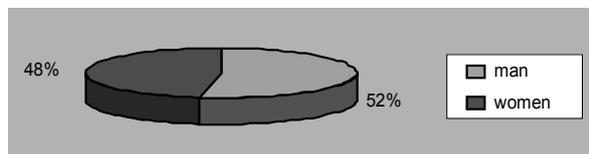


Figure 2. Gender distribution

This figure shows that the most common gender is man.

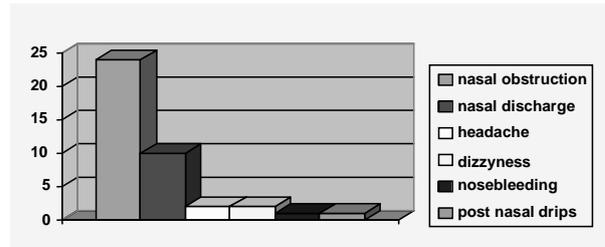


Figure 3. Main symptom

This figure shows that the most common main symptom is nasal obstruction (60%)

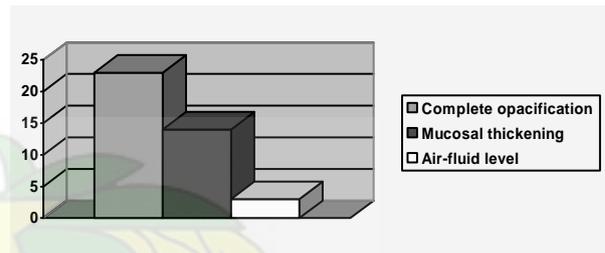


Figure 4. Radiographic findings

This figure shows that the most common radiographic finding is complete opacification (57.5%).

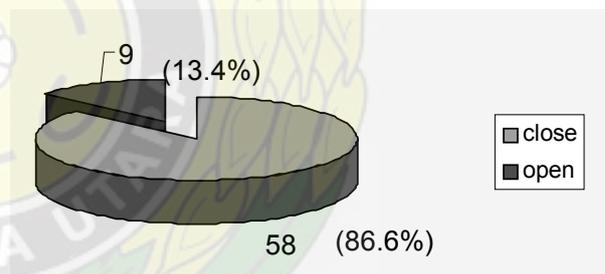


Figure 5. Ostiomeatal complex

This figure shows that 58 (86.6%) ostiomeatal complex are close.

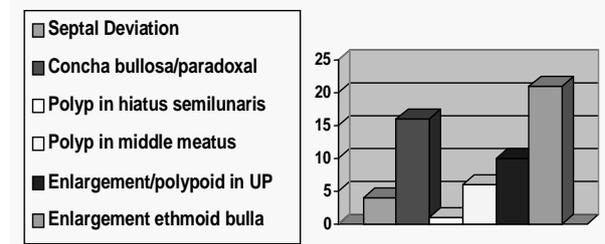


Figure 6. The abnormality of ostiomeatal complex

This figure shows that enlargement of ethmoid bulla is the most common abnormality (36.2%).

DISCUSSION

The youngest patient participated in this study was 15 years of age. The reason is because the development of the maxillary sinus structure is completed at the age of 14.¹⁰ Different research showed a different mean age. Nuty in Jakarta reported the mean age was 26 years old.¹² Nadel reported the mean age was 47.3 years.¹³ In this study the mean age is 38.3 years. Massudi in Semarang 1991 reported that the most common age distribution was 21-25 years while in this study between 35-44 years.

The common symptoms of chronic maxillary sinusitis are nasal obstruction, nasal discharge and facial fullness. Benninger reported that nasal obstruction was the main symptom.⁹ Massudi reported that the main symptoms were nasal obstruction(42.4%), nasal discharge (33.4%), and headache (15.1%).¹¹ In this study we found that the most common main symptom is nasal obstruction (60%). The rest were nasal discharge (25%) and headache (5%). Kennedy reported that nasal obstruction is related to abnormal nasal meatal and sinus that disrupt the ventilation and nasal drainage.²

Sinusitis is judged to be present if radiographic finding shows that there is mucosal thickening, air-fluid level or complete opacification of the maxillary sinus.¹⁴ Nuty WN reported that the most common radiographic finding was complete opacification (87%).¹² In this study it was found that the most common radiographic finding is complete opacification (57.5%). Cody reported that mucosal thickening is usually present in allergy and vasomotor reaction. Pathological change will enhance the mucosal thickening with sinus secretion if there is bacterial infection. Air-fluid level emerges because of transudation in submucosa fills the sinus cavity as an inflammation response.¹⁵ Rachelevsky reported that 37 % of chronic maxillary sinusitis patients are positive in allergy skin test.¹⁶

The etiology of chronic maxillary sinusitis are multifactorial. Ostiomeatal complex plays an important role in pathophysiology of chronic maxillary sinusitis. Stammberger reported 90 % of chronic maxillary sinusitis are commonly due to the abnormality of ostiomeatal complex. This study showed that 86.6 % abnormality is in ostiomeatal complex. Enlargement of ethmoid bulla (36%) was the most of ostiomeatal complex abnormality, and 16 (27.6%) were polyps in concha bullosa and concha paradoxal, 10 sinuses (17.3%) were abnormal uncinata process, 7 sinuses (12%) were polyps in middle

meatus and hiatus semilunaris, and 4 (6.9%) cases were septal deviation. Penttila reported that polyp was 54 %.¹⁷ In this study it was not clear why the enlargement of bulla ethmoid as the most common cause. According to the literature, anterior ethmoid bulla adjacent to middle turbinate which has a direct and strong contact with inspiration. The air-flow changes in this place, then settles the particles which size is more than 6 μm are trapped. These particles precipitate mucosal inflammation process and make the ostium narrow.²

CONCLUSION

Most chronic maxillary sinusitis (86.6%) were caused by ostiomeatal complex abnormality and the most common cause was the enlargement of ethmoid bulla (36.2%).

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