Case Report :

Bilateral maxillary sinus hypoplasia.

Hani Alanazi

Assistant Professor, Department of Surgical Specialties, College of medicine, Majmaah University, Saudi Arabia .

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Corresponding Author:

Hani Alanazi, Assistant Professor, Department of Surgical Specialties, College of medicine, Majmaah University, Kingdom of Saudi Arabia,
Email: h.mufadhi@mu.edu.sa , Tel: +966555241165

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Abstract

Maxillary sinus hypoplasia is an uncommon condition characterized by underdevelopment of the maxillary sinus antrum. Typically, it is accompanied by other anomalies, such as abnormalities in the uncinate process and infundibular passage. We present a rare case of bilateral maxillary sinus hypoplasia in a 22-year-old, symptomatic patient who didn't respond to maximum medical therapy. Combining a detailed history, endoscopic examination, and CT scan are crucial in diagnosing sinus diseases, particularly in MSH cases.

Keywords:

Maxillary; sinusitis; hypoplasia; sinus.

Introduction

Maxillary sinus hypoplasia is an uncommon condition that results in the underdevelopment of the maxillary sinus antrum and is typically associated with other anomalies, such as the uncinate process and infundibular passage.[1] It develops congenitally due to midfacial skeleton growth failure.[2] Maxillary sinus hypoplasia occurs either unilaterally, which is more common, or bilaterally. Bolger et al. classified maxillary sinus hypoplasia into three types: Type I is mild hypoplasia, with normal uncinate and infundibulum; type II is significant hypoplasia, with a hypoplastic or absent uncinate and pathological infundibular passage; and type III involves a cleft-like sinus and an absent uncinate[3]. The etiology of MSH includes embryological and acquired causes such as trauma or infection, causing the arrest of sinus pneumatization.[4] Incidences of maxillary sinus hypoplasia range from between 1.5 and 10%[5]; however, there are fewer actually reported cases. The prevalence of bilateral

MSH is far lower and estimated at 0.4% to 0.6%.[6] Computed tomography (CT) scanning and an endoscopic examination of the sinus are necessary diagnostic tools in detecting such an underlying abnormality.[7]

Case Report

A twenty-two-year-old male presented as medically free, with a history of nasal obstruction predominately in his left nostril along with recurrent nasal discharge, intermittent allergic rhinitis symptoms, hyposmia, and facial pain. He snores and experiences sleep disturbances. There are no orbital complaints or other ear or throat symptoms. The patient underwent multiple trials of medical management, including sodium chloride nasal wash and intranasal corticosteroid, with no significant benefit. The patient is overweight with clear enophthalmos in both eyes (Figure 1). A nasal endoscopy showed severe left-side nasal septal deviation with inferior bilateral turbinates hypertrophy. It also showed bilateral obliterated ostiomeatal complex. Grade 3 polyps were bilaterally noted from both ethmoidal areas, and the nasopharynx was intact. An ear examination showed an intact bilateral tympanic membrane. The oropharynx and oral cavity exam were normal. The patient was sent to the radiology department, where a CT of the paranasal sinuses was performed. On his next visit, the CT PNS was reviewed (Figure 2), showing sever DNS to the left side and bilateral inferior turbinates hypertrophy. Anaplastic frontal sinuses bilaterally. Both maxillary sinuses are hypoplastic. Both sides show a normally developed uncinate process and infundibulum consistent with Bolger type I; however, the orbits appeared normal. He showed bilateral opacification of the anterior ethmoidal air cells, partially opacified bilateral posterior ethmoid air cells, and a sphenoid sinus. The patient was counseled for surgical management and booked for septoturbinoplasty and bilateral functional endoscopic sinus surgery (FESS).



Figure 1: Enopthalmus of both eyes

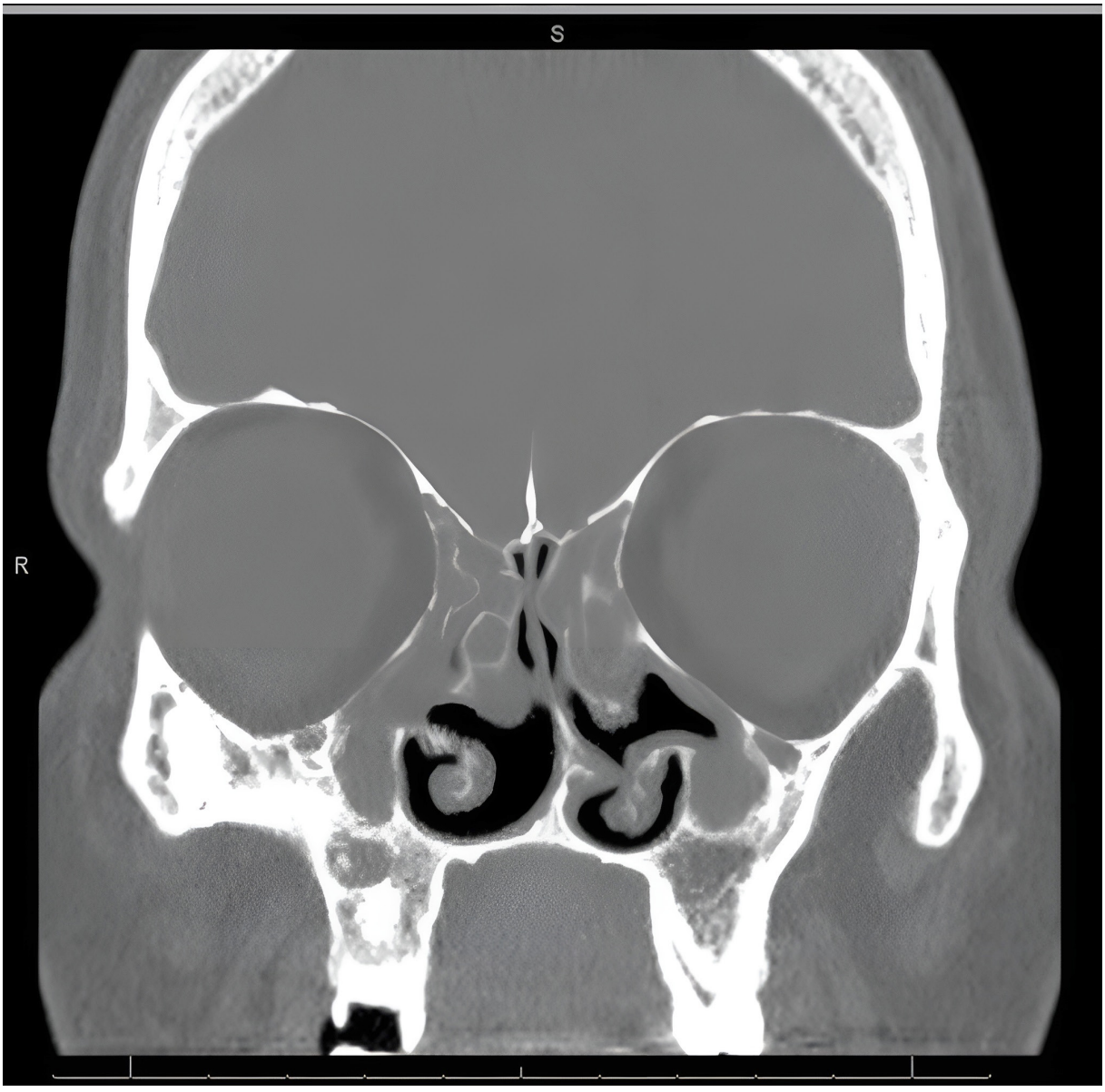


Fig. 2 : Bilateral maxillary sinus hypoplasia

Discussion

Maxillary sinus hypoplasia is an uncommon condition, and no definitive etiology of MSH/MSA has been identified, although various congenital and acquired contributors have been suggested.[5] In many cases of MSH, patients appear healthy with no significant signs or symptoms of sinus diseases. Nevertheless, the long-term hypoventilation of maxillary sinuses results in negative pressure, which manifests clinically as hypoglobus and enophthalmos and is associated with unilateral maxillary hypoplasia.[8] Physicians should anticipate such conditions in cases of orbital manifestations, such as hypoglobus and enophthalmos or patients with refractory sinusitis, to determine medical treat-

ment by asking for a CT of the sinuses.[6]

Dedeoğlu and Duman (2020) identified MSH as each maxillary sinus having half or less of the maximum horizontal or vertical linear dimension of the orbit.[9] Although the Bolger classification system is also widely used, it might require additional details. As in type I MSH, the uncinate process and ethmoidal infundibulum could be displaced to variable degrees beneath the orbit floor, as seen in our case, versus the usual placement in the lateral nasal wall.[10] Based on previous reports, no well-established objective method for classifying MSH into differentiate mild, moderate, and sever hypoplasia exists. Thus, more descriptive and volumetric studies might add value to these conditions.[11] The uncinate process is a key landmark in endoscopic sinus surgery. The absence or abnormal placement of the uncinate process in cases of MSH could violate the medial orbital wall during endoscopic procedures.[12]

Conclusions

Combining a detailed history, endoscopic examination, and CT scan are crucial in diagnosing sinus diseases, particularly MSH cases. CT is the best tool for evaluating the detailed anatomy of the sinuses, including MSH. Analyzing CT images and understanding anatomy helps in surgical planning and approach to help prevent possible complications. More studies are required to develop an objective classification system.

Funding

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Institutional Review Board Statement

The study was approved and conducted according to the guidelines of Majmaah University ethical committee board.

Informed Consent Statement

Informed consent was obtained from all subjects involved in the study.

Conflicts of Interest

None

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