Stage II Chronic Maxillary Atelectasis Associated with Subclinical Visual Field Defect

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Abstract

Introduction Chronic maxillary atelectasis (CMA) is characterized by a persistent decrease in the maxillary sinus volume due to inward bowing of its walls. According to its severity, it may be classified into three clinical-radiological stages.

Objective To report a case of stage II CMA associated with subclinical visual field defect.

Case Report A 34-year-old woman presented with a 15-year history of recurrent episodes of sinusitis and intermittent right facial discomfort for the past 5 years. She denied visual complaints, and no facial deformities were observed on physical examination. Paranasal sinus computed tomography (CT) demonstrated a completely opacified right maxillary sinus with inward bowing of its walls, suggesting the diagnosis of stage II CMA. A computerized campimetry (CC) disclosed a scotoma adjacent to the blind spot of the right eye, indicating a possible damage to the optic nerve. The patient was submitted to functional endoscopic sinus surgery, with drainage of a thick mucous fluid from the sinus. She did well after surgery and has been asymptomatic since then. Postoperative CT was satisfactory and CC was normal.

Discussion CMA occurs because of a persistent ostiomeatal obstruction, which creates negative pressure inside the sinus. It is associated with nasosinusal symptoms but has never been described in association with any visual field defect. It can be divided into stage I (membranous deformity), stage II (bony deformity), and stage III (clinical deformity). The silent sinus syndrome is a special form of CMA. This term should only be used to describe those cases with spontaneous enophthalmos, hypoglobus, and/or midfacial deformity in the absence of nasosinusal symptoms.

Keywords
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► maxillary sinus
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Case Report

A 34-year-old woman presented to the otolaryngology clinics complaining of recurrent episodes of maxillary acute rhinosinusitis, accompanied by facial pain, nasal congestion, and rhinorrhea, for more than 15 years. For the past 5 years, nasosinusal symptoms had partially improved but intermittent and progressive right facial discomfort had developed. General and otolaryngologic physical examinations were unremarkable, except for hyperesthesia to light touch on right malar region. Computed tomography (CT) of the paranasal sinuses was therefore performed (►Figs. 1 and 2).

Despite not complaining of visual symptoms, a complete ophthalmologic evaluation was also undertaken. Computerized campimetry (CC) disclosed a scotoma adjacent to the blind spot of the right eye (►Fig. 3). Clinical enophthalmos, hypoglobus, and/or facial deformity were not present and the remainder of the ophthalmologic assessment was normal.

Based on her clinical and radiologic presentation, she was diagnosed with stage II CMA. She was submitted to functional endoscopic sinus surgery, which included right uncinectomy, bullectomy, and maxillary antrostomy. During the procedure, a thick mucous fluid was aspirated from inside the affected sinus. She did well after surgery and radiologic controls were satisfactory (►Fig. 4). The visual field defect completely resolved, and the patient has been asymptomatic during a 3-year follow-up period.

Discussion

CMA is an acquired and unusual condition that refers to a persistent and progressive decrease in maxillary sinus volume due to an inward bowing of its antral walls. It seems to affect patients in their late 30s or early 40s, with no gender preference and similar incidences in left and right sides.
Considering its clinic-radiological evolution, CMA can be broken down into three stages, which represent the spectrum of the disease: stage I, membranous deformity with lateralized soft medial wall; stage II, bony deformity with inward bowing of superior, anterior, and posterolateral osseous walls; stage III, clinical deformity with apparent facial asymmetry, enophthalmos, and/or hypoglobus.

CMA is also accompanied by symptoms related to the nose and paranasal sinuses, including facial pain, discomfort or pressure, headaches, congestion, and/or rhinorrhea. Interestingly, nasosinusal symptoms are inversely related to the severity of maxillary sinus deformity. Although early stages of CMA (stages I and II) are usually associated with history of nasosinusal symptoms, late-stage CMA (stage III) is often asymptomatic at the time of the diagnosis. It is theorized that in advanced cases the absence of important nasosinusal symptoms in initial phases and in the course of the disease would explain the delayed diagnosis and more pronounced bony and aesthetical deformities.

Table 1 Spectrum of the disease CMA/SSS

<table>
<thead>
<tr>
<th>CMA</th>
<th>Stage I</th>
<th>Stage II</th>
<th>Stage III</th>
<th>SSS</th>
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</thead>
<tbody>
<tr>
<td>Terminology</td>
<td>Membranous (soft medial wall)</td>
<td>Bony (osseous walls)</td>
<td>Clinical (enophthalmos, hypoglobus, facial asymmetry)</td>
<td></td>
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<tr>
<td>Deformity</td>
<td></td>
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<td></td>
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<tr>
<td>Nasosinusal symptoms</td>
<td>+++</td>
<td>++</td>
<td>+</td>
<td>–</td>
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</tbody>
</table>

Abbreviations: CMA, chronic maxillary atelectasis; SSS, silent sinus syndrome.

*The diagnosis and differentiation of both conditions are based upon history, physical examination, and characteristic radiological findings.*

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**Fig. 4** Postoperative coronal computed tomography of the nose and paranasal sinuses. Wide maxillary antrostomy can be appreciated.
hypothesis. This is the first case of CMA so far to be described in association with some sort of visual field impairment and possible damage to the ipsilateral optic nerve. CMA/SSS is better managed in a two-step manner. It is first mandatory to relieve the obstruction of the maxillary sinus and restore its normal ventilation. This is usually achieved via functional endoscopic sinus surgery. During the procedure, as the orbital floor and the uncinate process are usually lower and more lateralized, respectively, special attention must be kept not to damage orbital content. The second step consists of correcting clinical deformities whenever present. Reconstruction of the orbital floor is the most commonly performed procedure and various techniques are available for this purpose. As spontaneous resolution of clinical deformity may occur after adequate aeration of the sinus, waiting a few months between the two surgical approaches is highly recommended.

Conclusion
We described a very illustrative case of stage II CMA. It seems to be the first case of CMA associated with any sort of visual field impairment to be reported in literature. SSS is considered a form of CMA. We highlight the importance of the correct diagnosis and differentiation between these terms.

References
2. Brandt MG, Wright ED. The silent sinus syndrome is a form of chronic maxillary atelectasis: a systematic review of all reported cases. Am J Rhinol 2008;22:68–73