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Case Report

Mucopyocele of the Maxillary Sinus: About an Endoscopic Management

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Abstract

Introduction: Mucocele is a benign but expansive cystic formation, lined by a respiratory epithelium. When its content is infected it is called a mucopyocele. It usually develops in the frontal-ethmoid complex. The maxillary sinus location is exceptional.

Case Report: A 43 year old man, presented with chronic unilateral nasal obstruction, purulent rhinorrhea and anosmia. Rhinoscopy showed a bulge in the middle meatus. The computed tomography (CT) showed complete filling of the left maxillary with low-density mass. Magnetic resonance imaging (MRI) confirmed the diagnosis of mucpyeocele of the left maxillary sinus. Patient underwent endoscopic endonasal marsupialization with complete recovery.

Conclusion: Mucopyocele of the maxillary sinus is a benign rare lesion, however destructive. A radiological assessment is essential to guide the choice of surgical treatment. The endonasal route remains the reference treatment for this pathology.

Keywords: Maxillary Sinus; Mucopyocele, Mucocele

Introduction

Mucocele is defined as a mucus filled cavity that can occur in the oral cavity, appendix, gallbladder, paranasal sinuses or lacrimal sac [1]. When it is secondarily infected, as a natural evolution of the illness it is called a mucopyocele. The maxillary sinus localization is quiet rare, by far overridden by the frontal and anterior ethmoid sinuses localization [2].

We described a rare case of mucopyocele of the maxillary sinus in an adult and dived into its pathology, treatment and outcome.

Case Report

A 43 year old male with no relevant past medical history, reported with a chief complaint of right purulent rhinorrhea, unilateral nasal obstruction and anosmia evolving for 8 months. There was no history of any mass in the facial region, epistaxis or any ocular or dental complains, or any paresthesia or numbness present in the region of chief complaint. The extra-oral examination showed slight tenderness in the maxillary region without any evidence of swelling or inflammation. the intra oral examination showed a poor dental status with no swelling or inflammation. Rhinoscopy findings included an inflammatory state of the mucosa with a bulge in the internal wall of the maxillary sinus emanating from the medium meatus. The ophthalmological examination was normal.

Facial CT scan showed complete obliteration of the right maxillary sinus with soft-tissue density mass, responsible of a thinning and bulging of the inner wall of the maxillary sinus suggestive of benign expansive and destructive lesion of the right maxillary sinus (Figure 1). In order to properly diagnose and to judge the extent of the pathology an MRI was advised, showing a total filling the totality of the right maxillary sinus, hypersignal in T1 and T2 achieving a mass effect on the sinuso-nasal septum, with no effect on the nasal floor (Figure 2). which was in favor of a mucopyocele of the maxillary sinus. There was no intracerebral or intraorbital extension and all the other sinuses were unscathed. The biological samples was normal, including a normal blood cell count and a normal C reactive protein rate.

Figure 1: Facial CT scan in axial section showing a hypodense lesion of the maxillary sinus.

Figure 2: Facial MRI showing a hyperintense filling of the maxillary sinus evocating a mucopyocele.

Figure 3: Preoperative view showing large middle meatus antrostomy with cyst marsupialization.

The patient underwent an endoscopic endonasal marsupialization after large middle meatal antrostomy under general anesthesia.

The bacteriological culture of the drainage fluid from the maxillary sinus objectified the presence of *Staphylococcus aureus* sensitive to amoxicillin clavulanic acid which was prescribed as an antibiotic treatment orally for 10 days.

The evolution was marked by the improvement of the clinical symptomatology with restitution of the nasal ventilation and the smell.

Discussion

Mucoceles and mucopyoceles are rare cystic and cavitated collections originating in the paranasal sinuses. They most commonly occur in the frontal and ethmoid sinuses, therefore the maxillary sinus localization is quiet rare. A mucocele contains mucinous secretions, whereas a mucopyocele is an abscess-like formation that also contains purulent material [3].

Their origin has been the subject of much controversy but several theories have been proposed to try to explain the origin of this benign but destructive pathology. Mainly, the infectious theory secondary to the obstruction of the sinusal ostium, the inflammatory theory or the hypersecretory theory where the release of bone resorption factors cause the disease and finally the traumatic theory. The vicious circle: inflammation and ostial obstruction summarizes the cause of mucopyocele [4]. In this case, we can consider the bad dental state as a precipitating factor for the development of mucocele, it is after all an inflammatory nest. The incidence of mucocele in the general population is 0.4 - 0.8% [5], and the majority of mucocele occur in age between 40 to 70 years. There is a slight male predominance and right and left sides are equally affected [6].

The usual symptoms of mucopyocele of the maxillary sinus include nasal obstruction, cheek pressure or pain, rhinorrhea and anosmia [7]. These symptoms may be associated with ophthalmological or neurological signs such as headaches, orbital pain or exophthalmos. Cases of dacryocystocele, intra-orbital extension, and subdural empyema have been reported in the literature [8,9].

The diagnosis has greatly benefited from the contribution of imaging. On computed tomography (CT) the mucocele is an opacity that is often regular, expansive, blowing the bone walls and pushing back more or less neighboring structures. Magnetic resonance Imaging (MRI), also, allows to perfectly appreciate the extension of the mucocele and to specify at most its relationship with adjacent structures. It also permits the diagnosis by showing a typical appearance of a cystic pocket with well-defined walls. The signal is variable depending on the viscosity and protein content of the intramucocelic retention. So, it usually presents a T1 hypersignal associated with a variable T2 signal (hyper- and hyposignal depending on the protein concentration in the cavity) [10]. A microbiological study of 36 mucopyoceles from different sinuses and not exclusively from the maxillary sinus showed a polymicrobial aerobic and anaerobic bacteriology, such as *staphylococcus aureus, alpha-hemolytic streptococci, Hemophilus spp*, Gram-negative bacilli, *Peptostreptococcu* spp, *Prevotella* sp, *Fusobacterium* sp, and *Propionibacterium acnes* [11].

An early management is of the most importance in order to prevent any orbital and intracranial complication. The recommended treatment of this entity is based on the endonasal endoscopic surgery. In general, this approach is preferred in paranasal sinus mucoceles due to its many advantages including a minimally invasive surgery and a lesser recurrence rate (4.8%) [12]. The principle of this surgery is to widen up the mucopyocele so to evacuate its content, and to create a large communication between the mucocelic

pocket and the nasal cavity (1). Different methods are used: lateral marsupialization, medial marsupialization or a transverse excision.

Conclusions

Though it is a rare entity, the diagnosis, management and treatment of the mucopyocele of the maxillary sinus should be in the gear of every ENT practitioner, especially due to the intra cerebral complications it can cause which are life threatening.

Conflict of Interest

The authors declared that there is no conflict of interests.

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