CASE REPORT

Rhinology, 41, 38-40, 2003

A massive superior concha bullosa: case report and literature review*

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SUMMARY

The superior turbinate was the most neglected of the turbinates in the past. With the advent of functional endoscopic sinus surgery and coronal computed tomography imaging, considerable attention has been concentrated exclusively on the lateral nasal wall anatomy, including the hidden turbinate, whose symptomatic concha bullosa is extremely rare. Only a very few cases have been reported to date. This seemingly interesting as well as rare case report is concerned with unilateral hyperpneumatization of the superior turbinate, which contacts the septum and leads to headache, associated with bilateral massive concha bullosa of the middle turbinate.

Key words: superior turbinate pneumatization, concha bullosa, headache

INTRODUCTION

Concha bullosa is known as pneumatization of the middle turbinate and, less commonly, of the inferior and superior turbinate (ST) (Stammberger, 1991). Anatomically and technically, the ST has been the least accessible and most neglected of the turbinates. Furthermore, only a very few clinical conditions have been reported to be associated with the superior turbinate. However, recent advances in computed tomography (CT) imaging and nasal endoscopy have allowed for closer examination of this hidden turbinate. Specifically, pneumatization of the superior turbinate has been better identified by these advances (Christmas et al., 2001). These are seemingly aerated through the posterior ethmoid cells (Ariyurek et al., 1996). A symptomatic pneumatization of the superior turbinate is extremely rare. These reported cases were of symptomatic nature which required surgical correction. In these reported cases, superior concha bullosa (SCB) was bilateral and protruded anteriorly and inferiorly into the region between the middle turbinate and the nasal septum, which resulted in nasal obstruction, headache and loss of olfactory sense (Stammberger, 1991; Clerico, 1996; Christmas et al., 2001).

In this report, we present a case of unilateral hyperpneumatization of the superior turbinate on the right side with accompanying mucosal contact, associated with bilateral massive concha bullosa of the middle turbinate and septal deviation.

CASE REPORT

A 21-year-old woman was admitted to our hospital with headache complaints. After a neurologic work-up, she was referred to the Radiology Department for magnetic resonance imaging (MRI). Coronal sections revealed bilateral significant concha bullosa of the middle turbinates and left sided septum deviation without any evidence of sinusitis (Figure 1). Since hyperpneumatization of the right ST was observed in consecutive sections (Figure 2) no further CT imaging was required.

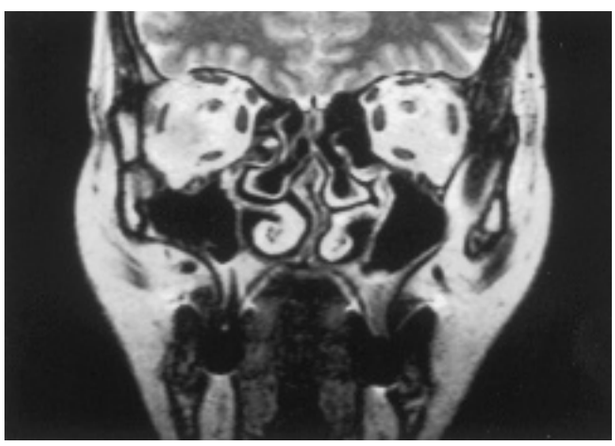

Figure 1. Coronal MRI scan showing massive bilateral middle concha bullosa and left sided septal deviation.

* Received for publication: January 28, 2003; accepted: August 13, 2003

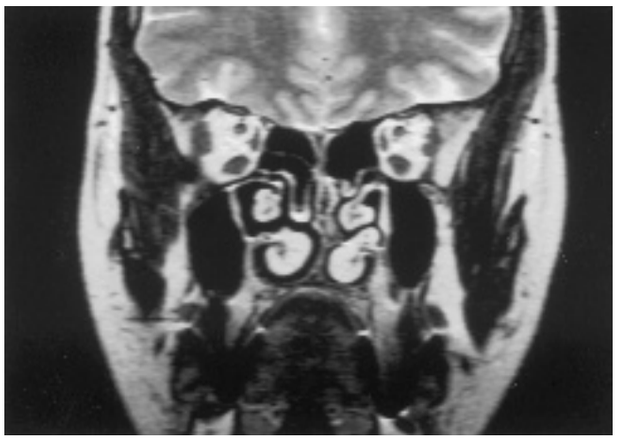

Figure 2. Coronal MRI scan demonstrating the pneumatized superior middle turbinate protruding inferiorly into the region between the middle turbinate and the nasal septum.

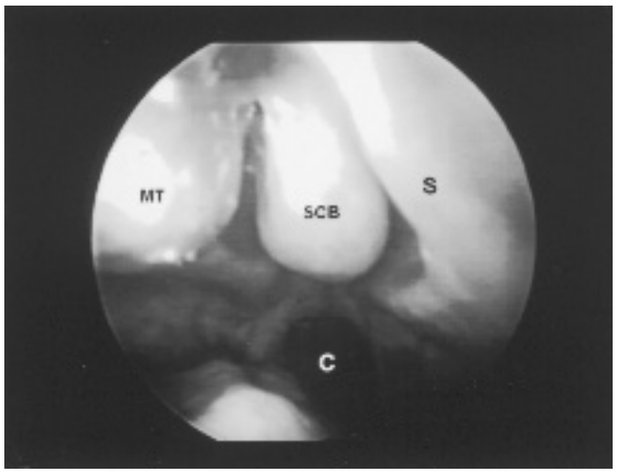

Figure 3. Endoscopic photograph of the right nasal cavitiy: (SCB) Superior choncha bullosa which contacts septum, (MT) middle turbinate, (S) septum, (C) Choana.

Otorhinolaryngologic consultation was requested. The patient reported no history of either sinusitis or allergy except nasal obstruction. The headache was throbbing and dull in nature, often triggered by weather changes. It was located over the forehead and behind both eyes. Average pain intensity was 6 on a 0 to 10 scale and was not associated with nausea or vomiting, but with invariable photophobia. The pain did not respond to anti-headache medication like acetaminophen. Diagnostic nasal endoscopy revealed left-sided septal deviation, bilateral middle turbinate enlargement and an enormous right superior turbinate with inferior protrusion which contacted the septum (Figure 3). No mucosal or other abnormalities were detected. The patient underwent septoplasty and bilateral endoscopic sinus surgery, which involved partial removal of both the pneumatized middle and right ST. The patient reported that the headache severity went down from an average of 6 to 2 (0 to 10 scale) after the removal of the nasal sponges and the internal silicon splints on the 5th postoperative day. At 6 months' follow-up, she reported a complete resolution of the nasal obstruction and headaches.

DISCUSSION

With the advent of functional endoscopic sinus surgery and coronal CT imaging, considerable attention has been given to lateral nasal wall anatomy including the ST which, anatomically and technically, has been the least accessible and most neglected of the turbinates (Christmas et al., 2001). Christmas et al. (2001) and Clerico (1996) suggested that this area might not always be accessible through nasal endoscopy and therefore direct application of topical anesthetics or injection of local anesthetics might be required for endoscopic visualization of the ST.

Concha bullosa is the pneumatization of the middle turbinate and, less commonly, of the inferior and ST (Stammberger, 1991; Ariyurek et al., 1996; Clerico, 1996; Christmas et al., 2001; Braun and Stammberger, 2003). It usually occurs bilaterally, however the degree of pneumatization varies not only from patient to patient, but also from one side to the other side of a given patient. Large differences in the degree of pneumatization between both sides are found most commonly in those with a marked deviation of the nasal septum. If the pneumatization is extensive, a large concha bullosa may cause significant problems by its size alone, such as headaches with accompanying mucosal contact, and/or a marked nasal obstruction. Stammberger (1991) reported that a symptomatic concha bullosa of the ST was extremely rare. He suggested that in these rare cases, SCB was bilateral and forced the turbinate so far anteriorly between the nasal septum and the middle turbinate resulting in headache and hyposmia. Clerico (1996) contended that mucosal contact was recognized as the cause of referred headache, which could mimic migraine. He also reported that, even without evidence of mucosal disease, the extension of pneumatized ST into this area could lead to headaches due to intranasal mucosal contact. He also claimed that before surgery, the etiology could be confirmed by the application of topical and/or local anesthetics onto the superior turbinate under endoscopic visualization. We did not perform the test to confirm the etiology prior to surgery because we had already decided to perform an operation on our patient, due to significant septal deviation and huge bilateral middle concha bullosa. In the present case, unilateral significant pneumatized superior turbinate in the right side, with accompanying mucosal contact, was easy to visualize by direct endoscopy without any anesthetic application because it protruded anteriorly and inferiorly into the region between the middle turbinate and the nasal septum.

Considered as a whole, it can readily be stated that symptomatic concha bullosa of the ST is extremely rare. Massive pneumatization of turbinates with accompanying mucosal con-

tact can be the cause of headache even in the absence of sinonasal inflammation. The rarity of the enormous size of SCB and its symptomatic characteristics makes our case a unique and a thrilling experience.

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SOCIETY NEWS

FELLOWSHIP JOURNAL RHINOLOGY – 2004

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1. Candidates for "**Rhinology**" Travelling Fellowship should be under 35 years of age and either a medically qualified trainee or research worker in a University Department.

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3. There is no period prescribed for the duration of a visit but it is anticipated that Fellows will spend at least 4-6 weeks.

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5. Each Rhinology Travelling Fellow will be required to write a report on his or her visit which should also include where appropriate scientific work resulting from the Fellowship. This must be offered to "**Rhinology**" within six months of the return of the individual from the Fellowship.

6. A presentation based on the work undertaken during the Fellowship will be given by the Fellow at the next ERS meeting following the conclusion of their Fellowship.

7. Applications (6 copies please) for the Awards for 2004 must reach the offices of "**Rhinology**" before June 1st, 2004 and must include the following:

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   b) An outline of the aims and objectives of the visit.
   c) Letters of support from the applicant's present consultant/chief.
   d) Letter of acceptance from the head of the department which they wish to visit.
   e) An outline of expenses.

These should be sent to Mrs. Margot Wijnen:

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