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CASE REPORT

Sphenoidal and ethmoidal sinoliths

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ABSTRACT

Sinoliths are rarely found calculi of paranasal sinuses. The most rarely they were found in the sphenoidal sinuses. At a routine Cone Beam CT exam of a 52-year-old male patient clinically silent small sinoliths were found bilaterally in the sphenoidal sinuses and a larger posterior ethmoidal sinolith was found on the right side. To our knowledge, such multiple sinuses involvement has not been previously reported.

KEYWORDS: rhinolith, rhinolithiasis, calculi, stones, nasal fossa.

INTRODUCTION

Sinoliths are rarely encountered calculi lodged in the paranasal sinuses[1]. They are also termed antroliths, rhinoliths, antral calculi, antral stones, or antral rhinoliths[2]. There were reported sinoliths of the maxillary sinus[3], ethmoidal sinuses[1,4-6], frontal sinuses[7,8]. The most rarely reported are the sphenoidal sinoliths. To our knowledge, only three cases of such rhinoliths were reported[2,9], none of these occurring bilaterally. The sphenoidal sinoliths are not usually listed as isolated sphenoidal sinus lesions[10,11]. A possible reason should relate to the conventional radiographs, which do not allow a good view of the sphenoid sinus due to its location in the central skull base[10]. On other hand, CT, as well as Cone Beam CT, allows a good visualization of the sphenoidal sinus anatomy and pathology.

CASE REPORT

In a 52-year-old male patient who was evaluated in Cone Beam Computed Tomography (CBCT) for planning a dental treatment, minor dense bodies were found unilaterally in the right posterior ethmoid and bilaterally in the sphenoidal sinuses.

The subject was explored using a Cone Beam Computer Tomography (CBCT) machine – iCat (Imaging Sciences International), and CT data was documented using the iCatVision software. Then, the DICOM files were exported and further evaluated with the Planmeca Romexis Viewer (v.3.2.7). The multiplanar reconstructions (MPRs) in sagittal, coronal and transversal planes, as well as the three-dimensional volume renderizations for which the „Soft Tissue" filter was used, were documented.

On the left side (Figure 1), a sphenoidal calculus was found at 10.50 mm above the pterygopalatine fossa; its density, as evaluated digitally, was of 570 HU, thus it corresponded to an osseous structure. The height of this left sphenoidal sinolith was 2.02 mm, the width was 1.74 mm and the sagittal size was 1.0 mm.

On the right side (Figure 2), sphenoidal and posterior ethmoidal sinoliths were found. The sphenoidal calculus was at 6.25 mm above the roof of the pterygopalatine fossa and its density was 362 HU. The size of the sphenoidal calculus was 1.27/1.25/1.5 mm. The ethmoidal sinolith was larger and was placed in the posterior ethmoid, in front of the sphenoidal concha, at the level of the ostium of the sphenoidal sinus. The inner wall of the posterior ethmoid air cell was separating the ethmoidal sinolith and the sphenoidal sinus

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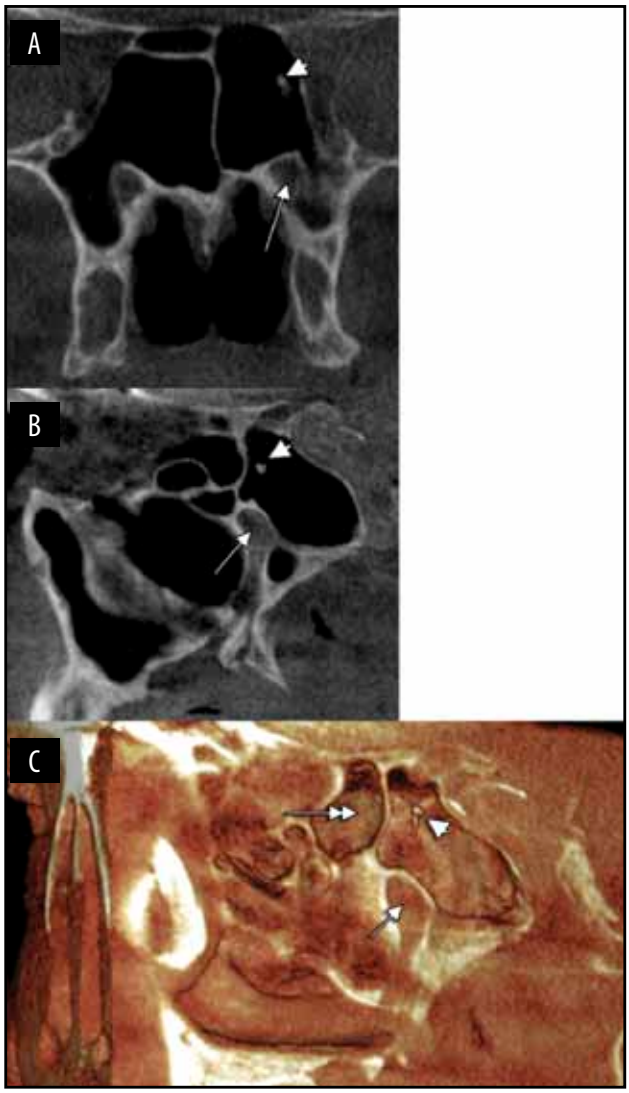

Figure 1 Left sphenoidal sinolith (arrowhead) was identified in multiplanar reconstructions, coronal **(A)** and sagittal **(B)**, as well as in three-dimensional volume renderization (**C**, lateral view). There are indicated the pterygopalatine fossa (arrow) and the posterior ethmoid (double-headed arrow).

ostium. The density of the ethmoidal sinolith was 713 HU in its periphery and negative in the core. Its maximal vertical size was 4.51 mm, the width was 3.0 mm, and the sagittal size was 3.24 mm.

DISCUSSIONS

The pathogenesis of sinoliths formation is not completely understood[12]. Predisposing factors of these dystrophic calcifications or ossifications, such as foreign sinus body or fungus, long-standing infections or poor sinus drainage, were indicated[2,5,12,13]. In our case, only the ethmoidal sinolith appearance would indicate a central nidus, which may be exogenous or endogenous in origin. However, on many occasions, such nidus is not evident[14].

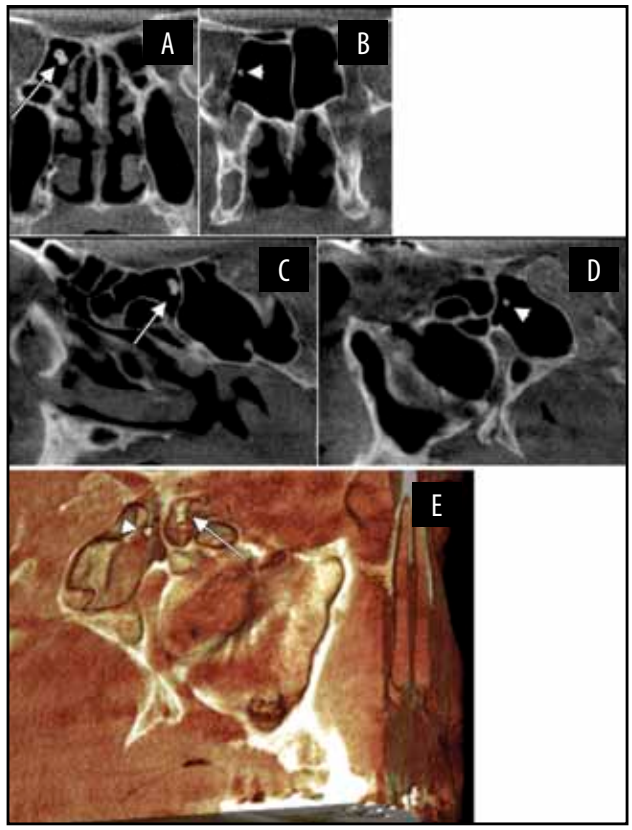

Figure 2 Right sphenoidal (arrowhead) and posterior ethmoidal (arrow) sinoliths are identified in multiplanar reconstructions, coronal **(A, B)** and sagittal **(C, D)**, and in three-dimensional volume renderization (**E**, lateral view).

To our knowledge, the first two cases of sphenoidal sinoliths were reported as „rhinoliths" by Wyllie et al. (1973), in a 67-year-old male patient and a 49-year-old female patient[9]. These were not clinically silent, as in our case, but those patients presented histories of headache and, respectively, retroorbital pain and diplopia[9]. In those cases, mucopurulent drainage in the nasopharynx and palsies of oculomotor and abducent nerves were found[9]. The next case of sphenoidal sinolith was reported in a 19-year-old male patient with history of headache and ear problems[2]. The sphenoidal sinolith was found at CT and MRI examination[2]. It can be so observed that the diagnosis of such sinoliths could be difficult, as they present nonspecific signs and symptoms[2]. Most sinoliths are however asymptomatic and are detected incidentally during imagistic investigations[15].

CONCLUSIONS

Rhinoendoscopy and CT, or CBCT exams are suitable tools to identify sphenoidal and/or ethmoidal sinoliths. Removal of such paranasal sinuses calculi by an endoscopic approach is an adequate option.

Conflict of interest: The authors have no conflict of interest.

Contribution of authors: All authors have equally contributed to this work.

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