Frontoethmoidal mucocele

J.Sales-Llopis

Neurosurgery Department, General University Hospital Alicante, Spain

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Definition

A frontoethmoidal mucocele is a benign, mucus-filled cyst The frontal and frontoethmoidal regions are reportedly the most common locations for paranasal sinus mucocele formation

Etiology

It occurs when the drainage pathway of the sinus gets blocked, causing mucus to accumulate and expand the sinus cavity, often due to chronic sinusitis, nasal polyps, or previous surgery.

Clinical features

Mucoceles may be asymptomatic, however, their ability to enlarge and erode into the adjacent intracranial and orbital regions due to ongoing mucus production and retention can cause facial pain, headaches, double vision, and proptosis [1].

Presenting with the appearance of Pott's puffy tumor is described [2]

Diagnosis

Radiographic features

CT

well-circumscribed expansile mass of the ethmoidal sinus with homogenous hypoattenuation of sinus contents [3] inspissated sinus contents may appear hyperdense [4] bony erosion/remodeling may be present non-enhancing with contrast

MRI

MRI is superior in determining the link of the mucocele to nearby soft tissue and differentiating it from other soft tissue neoplasms. Histopathologically, mucoceles resemble respiratory mucosa with regions of granulation tissue, reactive bone formation, bleeding, and fibrosis [5]

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used to identify intracranial extension or malignancy [6].

T1

hydrated content: low signal (most common) inspissated content: high signal

T2

hydrated content: high signal (most common) inspissated content: low signal may look like an air-filled sinus in advanced disease [7]

T1 C+ (Gd): enhancement, if present, only occurs at the periphery

DWI: variable

Differential diagnosis

Mucus retention cyst

does not fill the sinus

no bony expansion

Paranasal sinus carcinoma

(generally isointense or of intermediate intensity on MR imaging sequences) [8)]

Aspergillus sinusitis

Dermoid cyst

Osteoma (rare) [9)].

Meningoencephalocele is defined as an abnormal sac of brain tissue and meninges extending beyond natural skull margins, often leading to cerebrospinal fluid (CSF) leakage. When this condition arises in the spheno-ethmoidal region, the diagnosis becomes more challenging as it can be mistaken for other nasal pathologies, such as mucocele.

Bonomo et al. show in this case report a non-congenital sphenoethmoidal meningoencephalocele causing rhinoliquoral fistula and spontaneous intracranial hypotension.

This 65-year-old woman presented with sporadic rhinoliquorrhoea associated with orthostatic headache, nausea, and dizziness. Brain MRI revealed a small lesion of an ethmoidal sinus, which was successfully treated with endoscopic endonasal surgery. Histology confirmed the presence of meningoencephalic tissue positive for S100 protein on immunohistochemistry.

When dealing with lesions of the paranasal sinuses in contact with the anterior skull base, rhinoliquorrhoea presence suggests meningoencephalocele. In dubious cases, a proper workup, including a thorough clinical history and neurological examination, specific imaging, and a direct search of CSF-like markers, is essential to support the differential diagnosis. In such cases, a transnasal endoscopic surgical approach is recommended to obtain a final histological diagnosis and to perform eventual dural plastic surgery [10)].

Complications

Infection can lead to orbital cellulitis or meningitis [11) 12)].

Treatment

Frontoethmoidal mucocele treatment

Case reports

A 60-year-old female patient reported to the ENT outpatient clinic complaining of swelling over the medial aspect of her left eye that had begun slowly and progressed over a year. Although there were no neurological, ocular, nasal, or facial symptoms clinically, radiological and cytological examinations

aided us in arriving at the definitive diagnosis. The patient in this scenario had an infected mucocele and left medial canthal swelling with no visual impairment, which made it challenging to reach an accurate diagnosis. However, radiological evaluation and cytological examination focused on establishing a definitive diagnosis [13].

A case report of a patient with bilateral frontoethmoid mucoceles with no obvious predisposing factors and each side presenting three years apart, with no ongoing nasal or paranasal signs of disease in the interim. Bilateral paranasal sinus mucoceles have rarely been described in the literature; this case is unique, as it is the first description of a metachronous presentation. Additionally, the absence of any predisposing factors such as trauma, surgery, or chronic sinusitis in either presentation is unusual [14].

Kochhar LK, Chaudhry S, Kumar A. FRONTOETHMOIDAL MUCOCELE: A Case Report. Med J Armed Forces India. 1995 Oct;51(4):290-291. doi: 10.1016/S0377-1237(17)30997-8. Epub 2017 Jun 26. PMID: 28769319; PMCID: PMC5530197 [15].

Case report from the HGUA

Q11735

68-year-old male patient who reports discomfort in the left frontal and orbital region for the past 2 years. Over the past year, he has noticed a decrease in vision in the left eye

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Occupation of the left frontal sinus by low-density material consistent with a mucocele. It is associated with bulging and thinning of the anterior and posterior walls of the sinus. At the level of the posterior wall, a discontinuity is observed in the cranial portion of the sinus with a transverse length of approximately 14 mm and a craniocaudal length of 8 mm, extending the lesion approximately 3 mm intracranially. At the most caudal portion of the anterior wall of the sinus, a 14 mm transverse and 16 mm cranio-caudal discontinuity is identified, with an extension of the lesion into the soft tissues of the frontobasal and medial and superior orbital regions, causing a slight displacement of the eyeball laterally. At the medial orbital level, the lesion component measures approximately 19 x 9 mm (transverse by cranio-caudal diameters). There is mucosal polypoid thickening of the nasal cavities and ethmoid cells. Mild mucosal thickening of the maxillary sinus.

Mucocele in the left frontal sinus with erosion of the anterior and posterior walls. Extension of the lesion intracranially (approximately 3 mm) and frontobasal and orbital, causing displacement of the eyeball.“

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