Giant Ethmoid Mucocele Presenting as an Orbital Mass

Rohit Gulati · Shiv Kumar Soni · Anil Kumar

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Abstract Mucocele is a benign and expansile cystic lesion lined with respiratory mucosa of pseudo stratified columnar epithelium. Mucocele most commonly produces bone destruction within the paranasal sinuses. It mostly involves the frontal sinus followed by ethmoid and rarely sphenoid and maxillary sinuses. We report a case of giant ethmoid mucocele who presented with history of progressive unilateral protrusion of eye since 5 years. CT scan revealed a large mucocele of the ethmoid sinus with orbital extension on the same side. He was successfully treated with endoscopic sinus surgery.

Introduction

Mucocele is a benign and expansile cystic lesion lined with respiratory mucosa of pseudo stratified columnar epithelium [1]. Mucocele most commonly produces bone destruction within the paranasal sinuses. It mostly involves the frontal sinus followed by ethmoid and rarely sphenoid and maxillary sinuses. The etiology of mucocele is not clear but it is presumed that it is a retention cyst caused by obstruction of normal drainage from the sinuses. Other risk factor includes chronic low grade infection, allergic sinonasal disease, trauma and previous surgery.

We report a case of giant ethmoid mucocele who presented with history of progressive unilateral protrusion of eye since 5 years. CT scan revealed a large mucocele of the ethmoid sinus with orbital extension on the same side. He was successfully treated with endoscopic resection of mucocele.

Case Report

A 32 year old male patient was admitted with chief complaints of gradually progressive bilateral nasal blockage (left more than right), frontal headache and proptosis for last 5 years. He took treatment from ophthalmologist for protrusion of eye for over 2 years but no improvement. There was no history of rhinorrhea, diplopia, epistaxis or loss of vision. There was no previous history of trauma or surgery. Physical examination showed left proptosis with normal extraocular movements. Diagnostic nasal endoscopy revealed deviated nasal septum to the right. A large swelling was seen in the middle meatus of left nasal cavity. The middle turbinate could not be visualized. The swelling seemed to impinge against the septum.

CT scan showed a large soft tissue density lesion in the left ethmoid sinus causing trabecular break down and its marked expansion with thinning and resorption of lamina papyracea on left side of bulging in the extraconal region of left orbit and compressing the left medial rectus and producing proptosis. Medially it produced marked deviation of nasal septum towards right side and superiorly extending in the left frontal sinus and causing its blockage. This blockage was associated with left fronto-ethmoid recess and associated with soft tissue density in bilateral frontal sinus and in left maxillary sinus (Fig. 1, 2). The patient underwent endoscopic excision of mucocele with a wide middle meatal antrostomy and opening of frontal recess region. Discolored mucoid secretion was seen intraoperatively after excision of mucocele. Post operative the patient is symptom free.

Discussion

Mucoceles are slow growing benign pulsatile lesion found in the paranasal sinuses. They are cyst like structure lined with

R. Gulati (✉) · S. K. Soni · A. Kumar
B LK Superspeciality Hospital, Pusa Road, New Delhi, India
e-mail: drshivksoni@gmail.com

Fig. 1 CT PNS axial cut showing Giant ethmoidal mucocoele pushing the lamina papyracea laterally

Fig. 2 CT PNS coronal cut with lamina papyracea pushed laterally

pseudostratified respiratory epithelium [1]. Mucocoele cause local bone resorption and displacement of orbital contents. Mucocoele can form in any of the paranasal sinuses but frontal sinus (60–89%) is most commonly involved followed by ethmoid sinus (8–30%) and maxillary sinus (<5%). Mucocoele of sphenoid sinus are rare. Mucocoeles most commonly affect patients with age group 40–60 years. Paranasal mucocoele is rare in children, although some case reports have been published in literature [2, 3]. Mucocoele develops after obstruction of sinus ostium. Gradually they enlarge and fluid accumulates in the cavity leading to erosion of the adjacent bony structures. The etiology of mucocoele is not clear but one proposed mechanism for mucocoele formation is cystic degeneration of a seromucinous gland, resulting in a retention cyst [4]. Risk factor for mucocoele formation includes chronic low grade infection, previous sinus surgery, allergy and trauma. Less commonly benign (cystic fibrosis) or malignant neoplasm resulting in obstruction of ostium can lead to formation of mucocoele [5–7]. In most of the cases causative factors cannot be found as in our case. The symptoms associated with mucocoele vary

depending on the location, size, and degree of extension into adjacent structures. Patients with mucocoele usually presents with symptoms like headache, facial pressure, facial swelling or deformity, dental pain, nasal obstruction, ophthalmic manifestations like proptosis, periorbital pain, impaired ocular mobility, and diplopia. Expansion of sinus wall may compress optic nerve or compromise its blood supply leading to optic atrophy or direct spread of suppuration to optic nerve may cause optic neuritis may results in loss of vision. Intracranial extension through erosion of the posterior wall of the frontal sinus can lead to meningitis or CSF fistula, orbital cellulitis, meningitis and brain abscess. [8, 9].

In our case, mucocoele almost covered medial half of the orbit thus pushing the eyeball laterally. There was no complication associated.

The classic radiographic appearance of a mucocoele is generalized thinning and expansion of the sinus walls and there may also be evidence of sinus disease as well as bony erosions or or destruction of the sinus wall. The mucocoele usually appears homogenous and airless.

Computed tomography (CT) is currently the diagnostic method of choice for paranasal sinus pathology. On the basis of three-dimensional reconstructions the localization and extent of a mucocoele can be precisely determined and possible bone erosion diagnosed. Magnetic resonance imaging (MRI) is very helpful in differentiating mucocoeles from meningoencephaloceles and tumors.

Paranasal sinus mucocoeles can be effectively managed using the transnasal endoscopic approach and marsupialisation with complete recovery reported in 82–96% of cases, while an extranasal approach can be used for recurrence [10]. Majority of the mucocoele can be marsupialized endoscopically with minimal morbidity and long term results that are as good as done by the conventional external approach. Endoscopic marsupialization is the treatment of choice for fronto-ethmoidal mucocoele, as it is simple procedure causing less morbidity, short hospital stay, without external scar and without need of stenting [11].

In conclusion, patient who presented with proptosis should be investigated by CT scan to rule out ethmoid mucocoele so that early diagnosis and management can prevent the complications.

Conflict of interest none.

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