

Unusual Presentation of an Onodi Cell Mucocele: A Case Report

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1. Abstract

Onodi cell mucoceles are rare entities that can cause devastating ocular complications if not treated promptly. Devastating ocular complications if not treated promptly. Diagnosis may be delayed due to the wide range of differential diagnoses of unilateral retrobulbar optic neuropathy. We give a thorough assessment of the literature on this entity and describe a novel instance of Onodi cell mucocele in a 39-year-old woman. To the best of our knowledge, no prior review has been published on Onodi cell mucoceles. According to our research, following surgical decompression, 69% of patients with an Onodi cell mucocele reported improved vision. The great majority of these patients had endoscopic decompression; there was no discernible difference in the visual outcomes depending on when the surgery was performed. We describe here the case of a 61-year-old patient who had already undergone surgery for mucocele 12 years ago and who presented with permanent chronic nasal obstruction with no associated ophthalmological signs, revealing mucocele of the onodi cell.

2. Introduction

A benign, long-lasting cystic lesion lined with epithelium that arises at the cost of the paranasal sinus mucosa and typically contains sterile mucus is called a mucocele. Compared to the sphenoid sinus (which produces just 1-2% of mucoceles), the frontal

(65%) and ethmoidal (25%) sinuses are more common and have thin ostia [1,2,3,4,5]. The Onodi cell, first reported by Onodi in 1904, is an anatomical variant in which the posterior ethmoid cell enlarges and pneumatizes superolaterally into the sphenoid sinus during normal embryological development. The sphenoid sinus is closely related to the optic canal, optic nerve, and internal carotid artery. [6]. Therefore, it may serve as a potential cause of retrobulbar optic neuropathy. The incidence rate of the Onodi cell is estimated to be between 8 and 24% based on radiological studies, although in cadaveric.

3. Case Report

A 61-year-old man, who had previously undergone surgery for a mucocele 12 years ago, presented to us with a permanent left nasal obstruction with intermittent aqueous rhinorrhea and no other associated signs, in particular no epistaxis, no facial pain, no drop in visual acuity and no oculomotor disorders. Magnetic resonance imaging (MRI) of the face identified a presumed mucocele in the left onodi cell (Figure 1). Computed tomography (CT) identified a presumed mucocele in the left posterior ethmoidal sinus, an anterior and posterior ethmoidectomy with left sphenoidotomy and drainage of the mucocele were performed, and the ethmoidal cell obstruction was thought to be the result of the patient's previous sinus surgery, with very good post-operative improvement.



Figure 1: Axial CT shows the suspected mucocoele in the left posterior ethmoid sinus. B: Axial MRI shows the opacified Onodi cell.

4. Discussion

The production of mucocoeles is linked to a multitude of etiologies. Mucus builds up gradually and causes the lesion to enlarge. Primary causes include secretory duct blockage and restriction of mucus outflow. Secondary causes include sinus surgery and trauma.[7] All of these could lead to gradual remodeling of the surrounding osseous walls, deformation, and localized bone loss [8,9]. The position, direction, and size of the mucocoele, in addition to its size, all influence the clinical presentation of paranasal mucocoeles. Due to the compression placed on the eye, diplopia, globe displacement, and elevated intraocular pressure are the most frequent ocular findings in fronto-ethmoidal mucocoeles [w7, 10] However, because of their close anatomical relationship and the greater pressure they place on cranial nerves, Onodi cell and sphenoidal mucocoeles appear to be a more common cause of retrobulbar optic neuropathy, cranial nerve palsies, and abrupt sight loss.[12, 13] Furthermore, patients typically describe trigeminal nerve-mediated periorbital pain as a result of stretching of the dura and paranasal sinus mucosa.[10, 14] Imaging methods, including as CT and MRI, are crucial in the identification of Onodi cell mucocoeles, aside from clinical symptoms and signs. They facilitate the best surgical planning and differential diagnosis of related clinical entities. [15, 16, 17], When it comes to MRI scans, axial images provide the best identification of Onodi cell mucocoeles since they allow for a more accurate assessment of the optic nerve's path in relation to the sphenoid sinus and the posterior ethmoid.[16] The appearance of macrocele on MRI varies according to changes in protein content throughout time. A progressive increase in protein content may cause a reversal in intensity from the initial high-water content, which produces hypointense T1 and hyperintense T2-weighted pictures. [17] People between the ages of 30 and 60 are most likely to develop paranasal sinus mucocoeles. Maxillary sinus (10%), ethmoid sinus (25%) and frontal sinus (65%) are the sinuses most commonly affected [11]. It is thought to be extremely uncommon to have sphenoidal sinus and Onodi cell mucocoele. Clinical symptoms are frequently absent from them. That being said, certain patients

might experience general symptoms like headaches. At times, the initial symptom to manifest may be a reduction in visual acuity. In fact, the patient in our instance had no other complaints other than a headache, nasal congestion, and snoring. Magnetic Resonance Imaging (MRI) and CT can be helpful in the mucocoele diagnosis. The impacted paranasal sinus is entirely opacified and enlarged on CT scan. A substance's density varies according to the level of hydration. The prognosis is affected by the amount of time that passes between the beginning of a paranasal sinus mucocoele and surgery, however improvement in visual impairment is anticipated following surgery. Especially in cases of significant vision impairment, surgery should be done within 24 hours of the commencement. Similar to our patient, even a tiny mucocoele lesion confined to an Onodi cell can result in vision impairment. As a result, we propose that in order to assess retrobulbar optic neuritis, MR and a coronal-section CT scan are required.

5. Conclusion

The tight anatomical link between the internal carotid artery and optic nerve is demonstrated by the onodi cell. Though rare, onodi cell mucocoeles have the potential to induce vision loss, which could result in serious medical problems.As a result, it's essential to thoroughly examine the paranasal sinus structure and identify any potential changes. This would enable medical professionals to prepare ahead and handle any potential difficulties while also producing an accurate diagnostic for their patients. In our case, an endoscopic sinus surgery was used to successfully cure an Onodi cell mucocoele without any problems.

6. Declaration of Patient Consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given his consent for his images and other clinical information to be reported in the journal. The patient understand that name and initials will not be published and due efforts will be made to conceal identity, but anonymity cannot be guaranteed.

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7. Conflicts of Interest

There are no conflicts of interest.

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