



ONODI CELL MUCOCELE CAUSING OPTIC NEUROPATHY– A CASE REPORT

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ABSTRACT

A posterior ethmoid cell called the Onodi cell, also known as the sphenoid cell, pneumatizes supero-laterally and posteriorly into the sphenoid sinus. Onodi cell mucocoele is a rare condition that can have fatal effects on the eyes if not treated right away. Due to the large range of potential diagnoses for unilateral retrobulbar optic neuropathy, delays in diagnosis are probable. We report a case of a 40 year old male who presented with headache, pain in right eye and blurring of vision. CT scan of the head showed an expansile lesion in right Onodi cell with compression of right optic nerve in orbital apex and optic canal.

KEYWORDS: Posterior ethmoidal cell, Onodi cell, Sphenoid cell, Mucocoele, Compressive optic neuropathy.

INTRODUCTION

Mucocoele is a benign chronic epithelial-lined cystic lesion usually containing sterile mucus and occurs secondary to sinus drainage obstruction, resulting in the retention of sinus secretions. The majority of mucocoeles arise from the frontal (65%) and ethmoidal sinuses (25%), contrary to the sphenoid sinus (only 1.2%).^[1-5] The Onodi cell, described by Onodi in 1904,^[6] is a posterior ethmoidal cell that pneumatizes supero-laterally and posteriorly into the sphenoid sinus. This area is closely related to the optic canal, optic nerve and the internal carotid artery.^[7] Due to this close proximity, optic neuropathy can ensue secondary to compression resulting in ischemia of the optic nerve. We hereby present a rare case of unilateral Onodi cell mucocoele presented with vision loss due to compressive optic neuropathy highlighting the CT findings.

CASE REPORT

A 40-year-old man presented to the ophthalmology OPD with 2 week history of headache, pain in right eye and blurring of vision. His medical history included hypothyroidism. His family history was unremarkable. On examination his visual acuity in right eye was hand motion and in left eye was 6/6. Fundoscopic examination revealed hyperemia of right optic disc along with optic disc elevation and blurring of the disc margin. Under a diagnosis of suspected optic neuritis, the patient was prescribed with steroids for a week. The patient presented to OPD after a week with no improvement of his symptoms. Contrast enhanced computed tomography of the paranasal sinuses and orbit was performed. The scan showed non-enhancing soft tissue density

homogenous mass causing expansion of right Onodi cell with dehiscence of its lateral wall causing compression of right optic nerve in orbital apex and optic canal. Diagnosis of compressive optic neuropathy secondary to Onodi cell was confirmed.



Figure 1: Axial CT scan shows mucocoele in right Onodi cell with dehiscence of its lateral wall.



Figure 2: Coronal CT shows right optic nerve compression by Onodi cell mucocoele.

Operation

The patient underwent surgical removal of the lesion by endoscopic sinus surgery 1 week after the onset of symptoms. The right ethmoid sinus was opened, and the right superior nasal concha was removed. The right sphenoid sinus was widely opened from the natural ostium and the Onodi cell on top of the sphenoid sinus was punctured and the cyst contents were removed. The patient experienced an improvement in visual acuity 1 day after the surgical drainage.

DISCUSSION

The relation between the Onodi cells i.e the posterior ethmoidal cells and the optic nerve was first introduced by Adolf Onodi in 1904.^[6] With reports of incidence of Onodi cells ranging 8% to 14 %^[8-10] on the basis of radiological findings compared to 60% in cadaver studies,^[11] Onodi cells mucocles must be a consideration in cases presenting with vision loss as in this patient. Onodi cell has varying definitions that include at least one of the following criteria: Endoscopically identifiable optic canal bulge or the presence of air cell either lateral, superior or superolateral to sphenoid sinus and present in close approximation to optic nerve canal or Internal carotid artery canal.^[12] The pathophysiology of Onodi mucocle causing optic neuropathy and visual loss even though not yet completely understood.^[13] It can be attributed to various mechanisms such as direct mechanical compression and a mass effect on the optic nerve, ischemia from compression of the vasa nervorum, and inflammation resulting in optic neuritis.^[14] The clinical manifestation of Onodi mucocle varies from non-specific headaches, snoring or nasal congestion. Sometimes a decrease in visual acuity as in this patient is often the presenting complaint. Imaging techniques, such as CT and MRI, play an essential role in the diagnosis of Onodi cell mucocles. CT scans can show non-enhancing, expansile mass with possible erosion of the adjacent orbital wall. The ratios of mucus, protein, and water affect how intense the MRI signal is. On T1-weighted imaging, mucocles appear hypointense, and on T2-weighted imaging, they appear hyperintense. Compression and expansion of the adjacent structures can also be seen in some cases.^[15] Surgical decompression is the cornerstone of treatment for Onodi cell-associated optic neuropathy. The most popular surgical procedure is the endoscopic transnasal approach since it is less intrusive, has a lower risk of complications, and has a quicker recovery time for patients.^[16]

CONCLUSION

Onodi cell mucocle, even though rare, can cause compressive optic neuropathy due to its close proximity to the optic nerve, hence warrants consideration in patients with unilateral vision loss. Therefore it is very important to maintain a high level of suspicion for mucocles with arrangement for CT or MRI imaging and an early surgical decompression should be offered to

enhance visual recovery regardless of the duration of signs and symptoms.

Conflict of interest

None

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