

Acute Third Nerve Palsy with Pupillary Sparing: A Rare Manifestation of Sphenoid Sinus Mucocele

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Abstract Mucocele of para-nasal sinus is a rare entity resulting from chronic accumulation of mucoid secretion, leading to progressive thinning of sinus bony wall. We are presenting a case report of a middle age female patient with sphenoid mucocele causing sudden third cranial nerve palsy with pupil sparing. She was managed by urgent endoscopic marsupialization.

Keywords: Sphenoid mucocele, third nerve palsy, endoscopic sinus surgery

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1. Introduction

In the mucocele, sinus is filled with mucus secretion lined by an epithelium which causes progressive compression of surrounding structures [1]. The exact aetiology of mucocele is still not clear but traumatic obstruction of sinus ostium, cystic degeneration of mucous glands or polyps have been postulated [2]. Mucocele of the sphenoid sinus is a very rare lesion with variable clinical manifestations.

It is classified as primary and secondary. The primary mucocele develops as a mucous retention cyst arising from the mucosal lining where as secondary mucocele is due to obstruction to sinuses or cystic degeneration of a polyp [3]. The frontal and ethmoid area accounts for 80% of all mucocele while only 3% are seen in sphenoid sinus [4].

Clinical presentations of mucocele is due to pressure effect on the surrounding structure. Fronto-ethmoid and maxillary mucocele usually determines proptosis or visual disturbances due to its proximity to globe. Because the sphenoid sinus is surrounded by the cortical venous system, cranial nerves and meninges, it causes headache and cranial nerve involvement [5].

We are reporting a case of middle age female patient who presented with sudden onset of third nerve palsy with pupillary sparing and her radiological investigations confirmed diagnosis of sphenoidal mucocele. She was managed by urgent endoscopic marsupialization of sphenoid sinus.

2. Case Report

A 50 years old female, not a previously known case of diabetes or hypertension, presented to outpatient

department with the chief complaints of right retro orbital pain and headache for last two weeks. Three days back she also noticed sudden drooping of right upper eyelid, with double vision on right lateral gaze. She denied any history of nasal surgery, head trauma or any chronic sinus infection. On clinical examination there was grade 2 ptosis on right side with restriction of all extra-ocular movements except for abduction (Figure 1). The vision acuity was 6/6 on both sides and the intraocular pressure was 13 mmHg. The pupillary response to light was normal and there was no relative afferent pupillary defect. Dilated fundus examination reported normal optic disc with no arterial attenuation seen. On nasal endoscopy the nasal cavity and nasopharynx were normal and rest of the neurological examinations were also normal. Based on these findings diagnosis of a acute isolated right sided pupil sparing oculomotor nerve palsy was made.

Her Laboratory examination reports were within normal ranges. Sections of Non enhanced Computed Tomography (CT scan) through the skull base showed the opacification of the right sphenoid sinus by homogenous iso-attenuating contents (CT attenuation values ranging from 30-40 HU) causing expansion of the right sphenoid sinus with bony erosion in its lateral wall, leftwards bowing of inter sinus septum and suggestion of an intracranial extension superiorly (Figure 2). On Magnetic Resonance Imaging (MRI), the expansile right sphenoid sinus lesion demonstrated a homogenous hypo-intense signal intensity on T1 weighted images and hyper-intense signal intensity on T2 weighted images (Figure 3). The Post Gadolinium MRI images showed mild peripheral rim enhancement with no evidence of any thick or nodular enhancement patterns. The integrity of overlying dura was well maintained (arrow) thus ruling out intracranial extension. Overall MRI findings were consistent with a sphenoid sinus mucocele. The patient was started on broad

spectrum intravenous antibiotics and was taken up for urgent endoscopic marsupialization of mucocele. Under general anaesthesia, local infiltration was given and the middle turbinate was lateralized. The spheno-ethmoidal recess was visualized and the ostium of sphenoid sinus was widened. Around 10 ml of yellowish, creamy, purulent material was sucked out. The inner mucosal lining of sinus was oedematous (Figure 4). After abundant

irrigation with normal saline, right nasal cavity was packed with merocel which was removed after 48 hours. Her ptosis and the range of eye movements started to improve after 24 hours of surgery and became normal within a week. She was discharged on oral antibiotics and endoscopic examination after one month revealed a wide sphenoid sinus ostium and a healthy sinus mucosa. There was no loco-regional recurrence in 1 year follow up.



Figure 1. (a) and (b) Preoperative clinical photograph showing right eye grade 2 ptosis, exotropia, hypotropia (absence of adduction, elevation) and left eye normal unrestricted movement



Figure 2. Pre operative axial (a) and coronal (b) CT scan of paranasal sinus in bony window a homogenous expansile right sphenoid sinus lesion with erosion of lateral wall of right sphenoid sinus (open arrow)



Figure 3. Axial (a) and coronal (b) MRI showing an expanded right sphenoid sinus with hyper-intense signal on T2 weighted images and mild peripheral enhancement

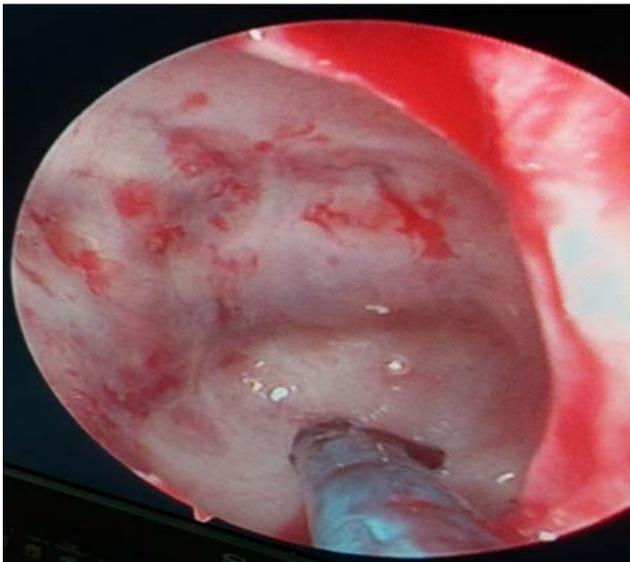


Figure 4. Intra-operative endoscopic view of oedematous mucosa of sphenoid sinus

3. Discussion

The first case of sphenoid mucocele was described by Berg in 1889⁷. Since then approximately 140 cases have been described in literature [8]. Its Initial symptoms are vague and difficult to recognize, but later due to extension to adjacent structures patient become symptomatic. Headache is reported in about 70% of cases and is due to stretching of dura in planum sphenoidale area [9]. Visual deterioration is due to an involvement of the optic nerve and is seen in 50 % of cases [9]. The oculomotor nerve is affected in around 70% of cases and is more common than trochlear and abducent nerve involvement [10].

Isolated third cranial nerve palsy is due to pressure exerted by mucocele causing stretching of dura containing oculomotor nerve [10]. The differential diagnosis of pupillary sparing third nerve palsy are neoplasm at cavernous sinus e.g. meningioma or micro vascular affecting condition like diabetes or hypertension [11]. Pupillary sparing is due peripheral location of nerve fibres supplying muscles in the cavernous sinus part of the third nerve.

Both CT scan and MRI are radiological investigations of choice for diagnosing mucocele. On CT scan hypo-intense, non-enhancing, expansile lesion is seen with bowing/thinning or erosion of sinus wall. On MRI it may exhibit varied appearances due to different protein concentration of the secretion however most commonly it shows a hyperintense signal on T2 weighted images [11]. A hyper-intense T1 weighted images signifies proteinaceous

secretion or mucoid material. The post gadolinium images may reveal thin rim enhancement pattern without nodularity. The treatment of sphenoid mucocele is surgical marsupialization. [12] Endoscopic approach is considered to be the gold standard these days, as visualization is better. Decompression of sinus should be done on urgent basis, if visual disturbance or cranial nerve involvement is there [13].

4. Conclusion

Sphenoid sinus mucocele though a rare lesion should be considered in differential diagnosis of sudden isolated pupillary sparing third nerve palsy. It requires an early diagnosis and aggressive therapy including endoscopic marsupialization to prevent complications.

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