CASE REPORT

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Anterior Clinoid Process Mucocele: A Case Presenting with Sudden Vision Loss

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Abstract

Background: Mucoceles are benign encapsulated lesions filled with mucus located in parasinus cavities. The occurrence rate of the anterior clinoid process is varying significantly in different studies. Visual disturbances, diplopia, and retrobulbar pain are among the common manifestations of anterior clinoid process mucocele. To our knowledge, 17 cases of Anterior clinoid process mucocele with visual involvements have previously been reported.

Aim: We aim to report a rare case of a middle-aged man with a large sphenoid mucocele admitted due to the loss of vision in his left eye.

Case presentation: A 46-year-old man with a sudden vision loss in his left eye was admitted to Loghman Hakim Hospital. In physical examination positive relative afferent pupillary defect (RAPD) was evident. The visual acuity of his right eye was normal, while his left eye had no light perception. Moreover, his visual field was normal on the right side. He had no other medical complaints.

Conclusion: Clinoid mucoceles causing cranial neuropathy are extremely rare. The proper diagnosis and prompt treatment are necessary to avoid permanent complications. With proper surgical intervention, recurrence of the mucoceles can be avoided.

Conflicts of Interest: The Authors declare no conflicts of interest.
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Introduction

Mucoceles are encapsulated fluid-filled benign lesions located in parasinuses cavities (1, 2). The anterior clinoid process (ACP) is a bony structure lying between the internal carotid and optic nerve. Pneumatization of ACP is rare and its rate of occurrence differs significantly throughout various studies (3-8). Although the exact pathophysiology of mucocele is not clear, some hypotheses have been proposed. These hypotheses include obstruction of sinus ostium, cystic development from embryonic epithelial residues, polyp degeneration, and cystic dilation of glandular structures (9). Mucoceles are mainly asymptomatic lesions accidentally found in the radiologic investigation. In addition, common clinical manifestations consist of persistent sinusitis not responding to medication, headache, ocular involvement, and cranial nerve palsies (10, 11). Due to the optic canal proximity, APC mucoceles can be presented by optic nerve involvements. In addition, oculomotor, trochlear, trigeminal, and abducens nerves can be involved (12-14).

These lesions are diagnosed by computed tomography (CT) scan, magnetic resonance imaging (MRI), and endoscopic evaluations (15). The standard treatments of sphenoid mucoceles consist of endoscopic resection or

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marsupialization (16). To our knowledge, 17 cases of Anterior clinoid process mucocele with visual involvements have previously been reported (17).

In this case report we presented a middle-aged man with large sphenoid mucocele admitted to Loghman Hakim Hospital due to the loss of vision in his left eye.

Case presentation

A 42-year-old man with sudden and severe visual loss in left eye visited the ophthalmology clinic. with negative history of recent visual disorder, vertigo, dizziness, and diplopia. there was no history of autoimmune disorders or head trauma with no medical illness and previous surgery. Moreover, His family history was not significant. In ophthalmologic examination there was no diplopia, proptosis, ptosis, or any other abnormality in the eyes' appearance or movements. He had no swelling, redness, and discharge. The pupils had normal shape, size, and symmetric. In physical examination positive relative afferent pupillary defect (RAPD) was evident. The visual acuity of his right eye was normal, while his left eye had no light perception. Thus, he had complete blindness of the left eye. Moreover, his visual field was normal in right side. in fundoscopy, it was revealed that the disk had sharp margin and normal color, with a small central cup. Furthermore, the sheen, course, and the color of arterioles and venules appeared normal. Overall, the fundoscopic evaluations was normal. The cranial nerve had normal function. Sensation, strength, reflexes, and tone were unremarkable in the trunk and extremities. The patient's gait was normal. With initial diagnosis of idiopathic optic neuropathy, he treated with corticosteroids for five days, with no sign of improvement. The diagnosis of atypical retrobulbar optic neuritis was considered for him. So, he was referred to neurology ward and plasmapheresis was considered for him. In imaging (CT, MRI), a well-defined lesion, expansile, with no fatty, calcification, ossificans component within was evident in ACP. The results of imaging studies of the lesion are illustrated in figures 1-3.

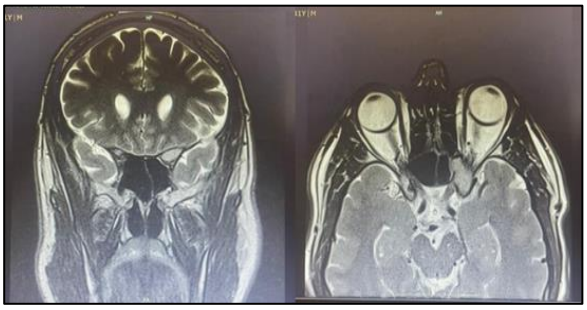

Figure 1. The T2-weighted MRI.

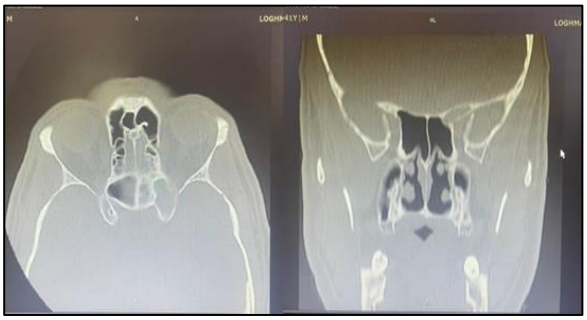

Figure 2. Paranasal sinus (PNS) CT scan.

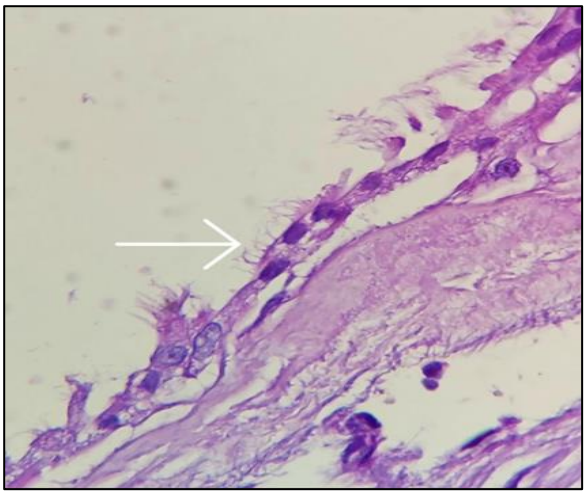

Figure 3. The microscopic view of the pathological specimen. In follow-ups, no progression of his left eye visual acuity was observed.

As a result, otorhinolaryngology consult was requested Under general anesthesia, with preserving middle turbinate endoscopic anterior and posterior ethmoidectomy and very wide sphenoidotomy was performed. Subsequently, a budging in left superolateral wall of the sinus were visualized with a very thin bony septum. The thinned bone was

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removed. The cyst was initially opened and then removed. The cyst wall and the fluid that was drained out specimen was sent for pathological evaluations. Microscopic evaluation revealed a rustic fibrohyalinized tissue covered by flattened dilated mucosa, and filled with thick mucus material. The results of pathological evaluations were consistent with mucocele. The Microscopic view of the sample is shown in figure 3.

Discussion

We report a case of 46-year-old man with a huge mucocele in ACP affecting the ophthalmic nerve causing sudden vision loss. Mucoceles are benign and encapsulated, lined with epithelium. Inside of these lesions are filled with mucus. They are expansile and can absorb the bony walls of the sinuses. Mucoceles are more common in frontal and ethmoidal sinuses (18, 19). The ACP pneumatization is very rare accounting for only one per cent of parasinuses mucoceles (5, 6). The ACP pneumatization rate varies significantly from 13 % in a study conducted by Hewaidi et al. (7) to 29.3% of 92 evaluated CT scans (20). ACP mucoceles are more common in mid-age population ranging from 18- to 68-year-old (17, 21-25). The reported case was a mid-age man.

The pneumatization of ACP creates a space small between optic canal and carotid border, thus it is related to ipsilateral protrusion of optic nerve to sphenoid sinus (8, 20, 26). The common manifestations of ACP mucoceles are decrease in visual acuity, visual field defects, diplopia, and retrobulbar pain. The reason of optic nerve involvement is the direct compression by mucocele or expansion of inflammation that can cause neuritis. The sudden decrease in visual acuity is considered as a negative prognostic factor; thus necessitates an emergent intervention (12-14, 27-34). The presented case had acute vision loss of his left eye, and in the follow-ups no regression of ocular symptoms was observed.

Clinical manifestations mainly depend on the structures been affected by the lesion. The presented case at the time of admission only suffered from left eye vision loss. He stated no headache or any other associating symptoms. Depending on density of fluid, existence of infection, mucoceles may have different density or signal intensity in CT scan and MRI (35). Mucoceles have homogeneous appearance on CT scan. MRI helps to visualize the lesion with more precision and evaluate the proximal structures. Mucoceles are usually isointense and non-enhancing lesions in both T1 and T2 weighted MRI (27, 35). The expansile nature of mucocele is the factor that differentiate this lesion from simple fluid retention (10). The expansile characteristics was evident in MRI of the presented case. The severity, duration of symptoms, and delay in prognosis and intervention all affect the prognosis of the disease. Although the optimal timing of the surgical intervention is not determined, the prompt diagnosis and intervention profoundly impact the prognosis of visual acuity recovery (36). Johnsen et al. reported that any delay in optic nerve decompression more than seven days can lead to incurable visual disturbances (31). Surgical intervention is an absolute indication for mucocele. Several treatment modalities have been proposed for mucocele. Nowadays, endonasal endoscopic approach is the treatment of choice. Others surgical approaches includes intranasal, and sphenoid ostium enlarging (37-39). We operated endoscopic anterior and posterior ethmoidectomy and a wide sphenoidotomy. It was reported that the endonasal endoscopic approach is associated with no recurrence in ten year-follow-up (18, 39, 40).

Conclusion

In conclusion, we reported a mid-aged man with ACP mucocele complained of vision loss, who was successfully treated with endoscopic

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anterior and posterior ethmoidectomy and a wide sphenoidotomy and marsupialization.

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Conflicts of Interest

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