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Case Report

A Fronto-ethmoidal Sinus Mucocele presenting with optic disc edema ☆,☆☆

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ABSTRACT

The frontal and anterior ethmoidal sinus mucoceles may enlarge progressively and invade into the orbit by destructing the bony walls of the sinuses leading to diplopia or proptosis, but it rarely result in optic nerve impairment. We report on a case of fronto-ethmoidal sinus mucoceles presenting with unilateral optic disc edema without visual disturbances. Ocular manifestations, radiographic techniques, and histopathological evaluation were used to make the diagnosis. Early diagnosis through a combination of ophthalmological examinations and radiographic techniques is imperative in patients with fronto-ethmoidal sinus mucoceles presenting with optic disc edema. It is important for the ophthalmologist to be aware of the ocular manifestations associated with sinus mucoceles to avoid misdiagnosis.

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Introduction

Paranasal sinus mucoceles are benign cystic lesions that are caused by obstruction of the sinus ostium or a mucous secreting gland [1]. This continuous obstruction leads to the progressive expansion of the sinus mucoceles, and finally extension into the adjacent structures, which can cause various complications depending on their original sites and the direction of expansion, the size of the formation and involvement of adjacent structures [2]. Because of the anatomic proximity to

the orbit, sinus mucoceles may initially present with a variety of ophthalmic manifestations, such as diplopia, proptosis, epiphora, lid swelling, periorbital pain, decreased visual acuity, visual field defect, ocular movement limitation, and eyeball displacement [2,3]. A frontal and anterior ethmoid sinus mucocele causing optic disc edema in the absence of visual disturbances is extremely rare [4]. Herein, we report a rare case of frontal and anterior ethmoid mucocele presenting with optic disc edema without visual disturbances, and help in understanding the ocular manifestations of sinus mucoceles in order to prompt diagnostic studies.

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Fig. 1 – Fundus photograph of both eyes, showing optic disc oedema in the right eye.

Case report

A 52-year-old man visited our ophthalmology clinic for his ocular redness and epiphora, accompanied by progressive periorbital pain on the right eye which had been intensifying over 1 week period. The patient denied clinical symptoms such as headache, nasal obstruction, nasal discharge, proptosis, diplopia and eyelid swelling, and visual disturbances. The patient did not have any symptoms with his left eye. He had no significant history of systemic or ocular disease, previous trauma, sinus diseases or surgeries.

The ophthalmic examination showed that his best-corrected visual acuity was 20/25 in right eye and 20/25 in left eye. The ocular motility examination showed a mild exotropia with a limitation of adduction of the right eye. The Hertel exophthalmometer examination showed 14.0 mm in both eyes. The anterior segment was mildly congested, the anterior chamber quiet, and the intraocular pressures were 19 mm Hg in right eye and 16 mm Hg in left eye. The pupillary light reflex showed no relative afferent pupillary defect (RAPD) in both eyes. A standard automated perimetry (Humphrey 24-2) was performed which showed no field defect in both eyes. Dilated fundus examination was notable for optic disc edema in the right eye (Fig. 1). Subsequent a brain and orbital magnetic resonance image (MRI) was performed and revealed an enlarging mass originating from the right fronto-ethmoidal sinus having an intraorbital extension consistent with a mucocele. The mass appeared to invade the orbit, lying nasally in apposition to and pressing on the medial rectus muscle and optic nerve of the right eye (Fig. 2). The patient was immediately referred to otorhinolaryngology department for surgical management to prevent optic nerve damage and visual acuity deterioration. After endoscopic examination, a frontal-ethmoidal mucocele with orbital extension was diagnosed and endoscopic sinus surgery with frontal-ethmoidectomy, mucocele excision and drainage was performed. Histopathological examination confirmed the diagnosis. Five days postoperatively the patient

was periorbital pain free with resolution of the epiphora. The ocular alignment examination showed that his ductions were full, his primary alignment was orthophoric and there were no deviating lesions.

Discussion

Paranasal sinus mucoceles extend progressively to the orbit due to continuous production and accumulation of mucus, and may cause variable ophthalmological manifestations depending on its location, the size of the mucocele, the involvement of adjacent tissues and direction of expansion [1]. The frontal and anterior ethmoid sinus mucoceles tend to cause proptosis, diplopia, displacement of the eyeball, mass in the inner canthus, lid swelling, and increased intraocular pressure due to the compression exerted on the eye, whereas the posterior ethmoid and sphenoid mucoceles are close to the III, IV, V, VI cranial and optic nerves, and more commonly lead to visual disturbance and orbital apex syndrome [5].

In this case report we describe a 52-year-old man who presented with optic disc edema without visual disturbances. Since unilateral optic disc edema is a pathological condition with a variety of etiologies, it is important to make a critical diagnosis of the underlying etiology depending on a thorough history and complete examination with careful attention to the optic disc. In the case of optic disc edema a broad differential diagnosis should be considered, including congenital structural anomalies, papilledema, optic neuritis, malignant infiltration, ischemic optic neuropathy, and compressive optic neuropath. A radiological examination of the brain and orbit is the primary diagnostic means to identify the possible pathogenesis of optic disc edema. In this case, diagnostic brain and orbital magnetic resonance image (MRI) revealed a large mucocele originating from the fronto-ethmoidal sinuses that was compressing the medial rectus muscle and optic nerve of the right eye. This case illustrated some com-

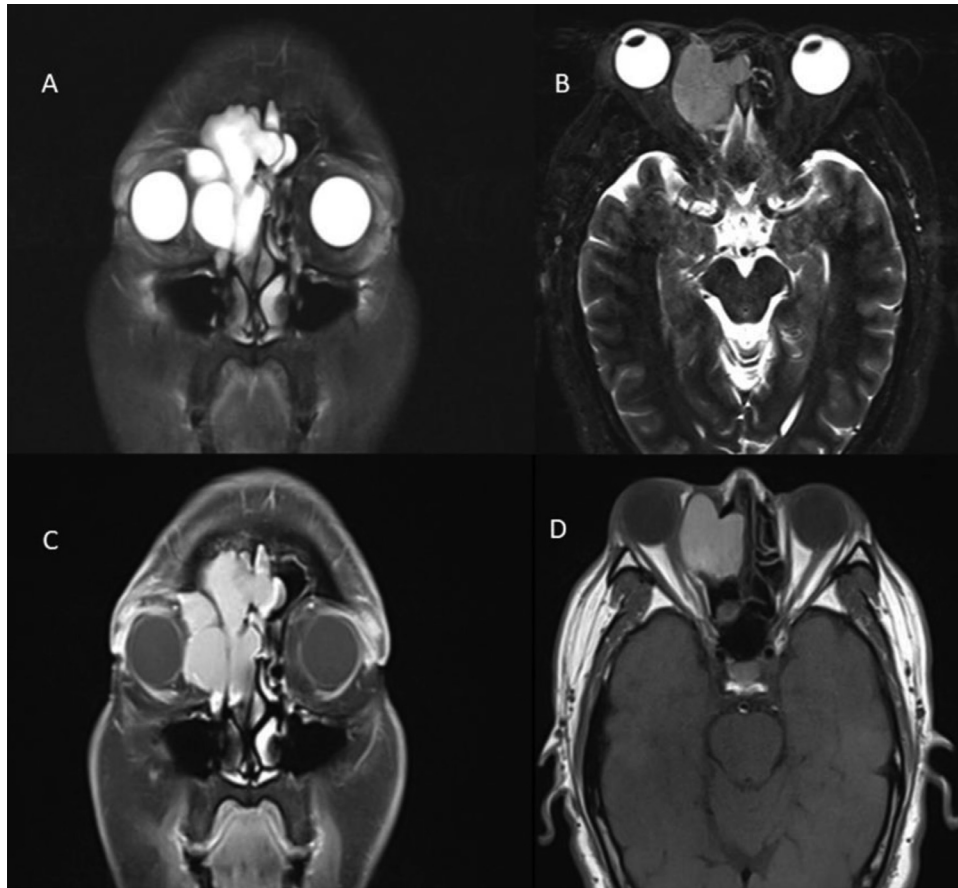


Fig. 2 – Magnetic resonance imaging (MRI) showed a mass on the right fronto-ethmoidal sinus mucocoeles. An enlarging mass originating from the right fronto-ethmoidal sinus push the right medial orbital wall laterally, lying nasally in apposition to and pressing back the right medial rectus muscle and the right eye ball. MRI of the right fronto-ethmoidal sinus mucocoeles demonstrated a hyperintense mass on T2-weighted images (A, coronal; B, axial) and intermediate signal intensity on T1-enhanced weighted images (C, coronal; D, axial).

mon features of fronto-ethmoidal mucocoeles, but also presented a diagnostic challenge as the patient did not have typical symptoms at the initial presentation. Epiphora due to lacrimal duct compression may be an unusual presentation of a fronto-ethmoid mucocoele. Although the stretching of the paranasal sinus mucocoeles might cause irritative lesions on trigeminal nerve terminals, periorbital pain is a very rare symptom in the anterior ethmoid and frontal sinus mucocoeles patients. Proptosis seems to be the commonest ocular manifestation of the fronto-ethmoidal sinus mucocoeles [6], but in this case proptosis wasn't obvious. The mechanism is possible the bulging frontal sinus mucocoele grew toward the ethmoidal sinus, destroy the lamina papyracea and resulted in ethmoidal atelectasis, thus enlarge the orbital space to accommodate the expanding fronto-ethmoidal sinus mucocoele. Usually the patients with a fronto-ethmoidal mucocoeles experience diplopia, its absence in this case being possible due to the increased fusional range or visual suppression afforded by the gradual onset of the exotropia. A frontal and anterior ethmoid sinus mucocoele causing optic disc edema is extremely rare. Although optic disc edema which occurred in this case may be caused by a mechanical compression of the optic nerve due to the fronto-ethmoidal mucocoeles extension, the most likely

explanation was that the expanding fronto-ethmoidal mucocoele led to circulatory disturbance of the vasa nervorum due to mechanical compression.

In conclusion, the sinus mucocoeles have an aggressive to the adjacent structures despite their benignity. Since many of the patients with paranasal sinus mucocoeles initially visited ophthalmology clinic because of subjective ophthalmological complaints, a good understanding of ocular manifestations associated with paranasal sinus mucocoeles by the ophthalmologist is particularly important for early diagnosis and rapid surgical intervention. Radiographic techniques are shown to be vital in the diagnosis of paranasal sinus mucocoeles. Therefore, early diagnosis through a combination of ophthalmological examination and radiographic techniques, an appropriate and prompt intervention are crucial in preventing visual compromise.

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