

Ocular Manifestations of Bilateral Ethmoidal Sinus Mucopyocele: Case Report

Bilateral Etmoidal Sinüs Mukopiyoselinde Oküler Bulgular: Olgu Sunumu

Özge Saraç, Kazım Bozdemir*, Gökhan Yalçın*, Ahmet Kutluhan*

Ankara Atatürk Training and Research Hospital, 2nd Ophthalmology Department, Ankara, Turkey

*Ankara Atatürk Training and Research Hospital, 1st Otorhinolaryngology Department, Ankara, Turkey

Summary

Mucocele of the paranasal sinuses are slowly growing, epithelium-lined cystic lesions with sterile content. When the mucocele content becomes infected with a bacterial super-infection, the lesion is defined as mucopyocele. Mucoceles or mucopyoceles are commonly located in the frontal and anterior ethmoidal sinuses and can manifest with ocular signs and symptoms, mostly proptosis. In this report, we demonstrate a case of bilateral ethmoidal mucopyocele in a 53-year-old female who presented with reduced vision, diplopia, and proptosis. Computed tomography (CT) scanning of the paranasal sinuses revealed cystic lesions filling the maxillary sinuses and anterior ethmoidal cells bilaterally and causing erosion in the walls of the sinuses. After marsupialization of the mucopyoceles was performed by endoscopic sinus surgery, the symptoms of the patient recovered rapidly. (*Turk J Ophthalmol 2011; 41: 354-6*)

Key Words: Mucopyocele, ethmoidal sinus, ocular findings

Özet

Paranasal sinüs mukoselleri yavaş büyüyen, epitel ile çevrili, steril içerikli kistik lezyonlardır. Mukosel içeriği bakteriyel süper enfeksiyon ile enfekte olduğunda lezyon mukopiyosel olarak adlandırılır. Mukosel veya mukopiyoseller sıklıkla frontal ve ön etmoidal sinüslerde lokalize olurlar ve sıklıkla proptozis olmak üzere oküler bulgu ve semptomlarla ortaya çıkabilirler. Bu olgu sunumunda görme azlığı, diplopi, ve proptozis bulguları ile görülen 53 yaşında bilateral etmoidal mukopiyoselli bir kadın hasta sunulacaktır. Paranasal sinüs tomografisinde bilateral maksiller sinüsleri ve ön etmoidal hücreleri dolduran, sinüs duvarlarında erozyona neden olan kistik lezyonlar gözlenmiştir. Endoskopik sinüs cerrahisi ile yapılan mukopiyosel marsupializasyon cerrahisinden sonra hastanın semptomları hızla düzelmiştir. (*Turk J Ophthalmol 2011; 41: 354-6*)

Anahtar Kelimeler: Mukopiyosel, etmoidal sinüs, oküler bulgular

Introduction

Sinus mucoceles are slowly growing, epithelium-lined, cystic lesions of the paranasal sinuses with sterile content.¹ The exact etiology of mucoceles is not certain, but it is possibly associated with scarring and obstruction of the sinus ostium secondary to inflammation, trauma, surgery, or neoplasms.¹ When the mucocele content becomes infected with a bacterial super-infection, the lesion is defined as mucopyocele.¹⁻⁴ These progressively enlarging lesions result in destruction of the walls of the sinuses, extend to the surrounding anatomical structures, and can cause serious cerebral and orbital complications due to abscess formation and rupture.⁵

Paranasal sinus mucopyoceles are commonly located in the frontal and anterior ethmoidal region and infrequently in the posterior ethmoidal, sphenoidal and maxillary area.⁶⁻⁷ Presenting signs and symptoms can vary depending on the location, size and degree of the bony involvement.¹ Although ethmoidal mucoceles are not uncommon, bilateral cases are rare. Herein, we report a case of bilateral ethmoidal mucopyocele presenting with diplopia, and proptosis.

Case Report

A 53-year-old female presented with double vision and lateral displacement of the globes. According to her past medical

Address for Correspondence/Yazışma Adresi: Dr. Özge Saraç, Ankara Atatürk Training and Research Hospital, 2nd Ophthalmology Department, Ankara, Turkey

Phone.: +90 312 291 25 25 Gsm: +90 505 741 00 18 E-mail: osarac2002@yahoo.com

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history, her complaints began two years ago and gradually progressed. She noticed a limitation in the movements of her right eye and a double vision 7 months ago. She also had headache occasionally. She did not have any systemic diseases except for arterial hypertension. Her ophthalmologic examination revealed proptosis bilaterally. Her eye movements were fully restricted in both adduction and abduction, and she had horizontal diplopia. Her vision was 6/10 in the right eye and 10/10 in the left eye. Biomicroscopic examination revealed normal anterior segment for both eyes. Pupils were equal, round, and reactive to light with no evidence of relative afferent pupillary defect. Dilated fundoscopic examination was remarkable for senile macular degeneration and grade II hypertensive retinopathy in both eyes. Interpupillary distance was measured as 85 mm (Figure 1).

The patient was evaluated by the ear, nose and throat (ENT) department. Endoscopic nasal examination revealed bilateral edema and obliteration of the middle meatus by a bulging cystic lesion. Computed tomography (CT) scanning showed



Figure 1. Preoperative view of the patient

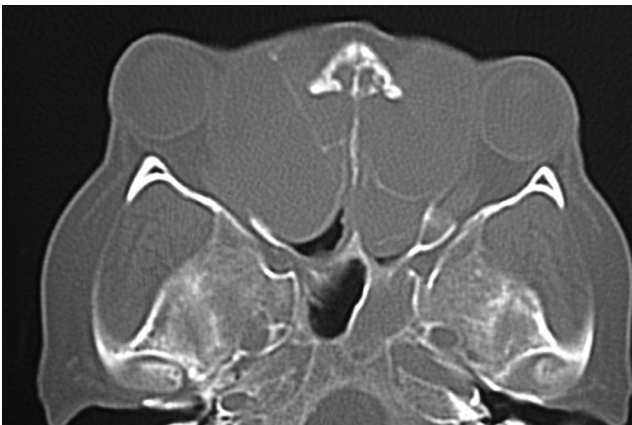


Figure 2. Preoperative axial computed tomography (CT) of the patient showing bilateral ethmoid sinus mucopyoceles

cystic lesions filling the maxillary sinuses and anterior ethmoidal cells bilaterally and causing erosion in the walls of the sinuses (Figure 2). The lamina papyracea was defective to some extent bilaterally. The medial rectus muscles, optic nerves and orbital fat tissues were displaced anterolaterally in both sides. The lesions did not show any contrast enhancement. Magnetic resonance imaging (MRI) revealed cystic lesions in the frontoethmoid region bilaterally, which were hyperintense on T2-weight images with contrast enhancement peripherally.

An endoscopic endonasal sinus surgery was performed by the ENT department. During the surgery, a mucopurulent discharge was drained from the cystic lesions, and the anterior and inferior walls of the cysts were excised completely. The uncinata process and lamina papyracea were seen as defective almost completely. The residual bony lamella of the ethmoids was excised completely. Then, the maxillary sinus ostia were enlarged. The maxillary sinus was also observed as full of mucopurulent material. The maxillary sinuses were cleaned and irrigated with an antibiotic solution.

The patient was given cefazolin (1 gr tid), and metranidazole (500 mg tid) for 14 days post-operatively. The exophthalmos and diplopia subsided. On post-operative 2nd day, the interpupillary distance was decreased to 65 mm (Figure 3). The vision was 6/10 in the right eye and 10/10 in the left eye. Histopathologic examination of the surgical material revealed a cystic lesion which was lined by the respiratory epithelium.

On post-operative 3rd month, the control CT showed normal orbital architecture.

Discussion

Mucocele is a destructive cyst that arises within the paranasal sinuses.⁸ If these sterile cysts become infected, the lesion is



Figure 3. Postoperative view of the patient

defined as mucopyocele.²⁻⁴ These space-occupying lesions can increase in size as mucus retention continues and can be exacerbated by active sinusitis.³⁻⁸ Differential diagnosis includes thyroid eye disease, orbital pseudotumor, orbital cellulitis, benign or malignant orbital tumors, encephalocele, or meningocele.³

Mucopyoceles of the paranasal sinuses are commonly located in the frontal and ethmoidal regions and infrequently in the posterior ethmoidal, sphenoidal and maxillary areas.^{6,10-13} Because of their slowly growing and non-infiltrating nature, the symptoms and signs develop slowly and depend on the localization and size of the lesion.

Mucoceles with orbital involvement generally present with a non-infiltrating mass effect resulting in orbital displacement, diplopia, proptosis, pain, decreased vision, and optic neuritis.⁷ These symptoms may be subtle for many years due to slowly progressive nature of the condition.¹¹ Wang et al. evaluated the initial presentations of the orbital mucoceles. They found proptosis in 66.7%, diplopia in 33.3%, ocular movement limitation in 26.7%, periorbital pain in 26.7%, palpable mass lesion in 26.7%, ptosis in 20.0%, decreased visual acuity in 20.0%, headache in 13.3%, and relative afferent papillary defect in 6.67% of patients as the initial presentation of orbital mucoceles.¹⁴ A study by Loo et al. highlighted the greater risk of optic neuropathy and poor visual outcome with sphenoid sinus, and fronto-ethmoidal mucoceles especially with the involvement of the posterior ethmoidal sinuses.¹⁵

CT and MRI help to diagnose mucoceles and to evaluate their relationship with the surrounding tissues.^{6,16,17} The most common radiologic finding on CT was bony defect of lamina papyracea and/or medial superior orbital rim.¹⁸ Surgical treatment is indicated for these cystic lesions.¹⁰ Treatment includes complete removal of the mucocele and mucosal lining of the involved sinus, and obliteration of the sinus.⁷ Recently, marsupialization with drainage (with sufficient removal of anterior and inferior walls) by endoscopic approach has been the therapeutic approach which may prevent recurrence of the disorder.⁷⁻¹⁰

The presented case had proptosis, diplopia, and decreased vision which were the most common presenting symptoms of the orbital mucoceles. The etiology was possibly due to chronic recurrent infections of the sinuses because there was no previous history of surgery or trauma. The ocular signs and symptoms of the patient were resolved after marsupialization endoscopic sinus

surgery which has been reported as a reliable therapeutic surgical technique with no rate of recurrence.¹⁹

In conclusion, mucoceles or mucopyoceles which may arise from any of the paranasal sinuses may manifest with ocular signs and symptoms, as in our case. Therefore, paranasal mucoceles or mucopyoceles should be born in mind in patients presenting with advanced proptosis, diplopia, and ocular movement limitation. In suspected cases, the required radiological investigations should be done.

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