

Frontal Mucocele Presenting with Forehead Subcutaneous Mass: An Unusual Presentation

Alında Cilt Altı Kitleleri Olarak Belirti Veren Frontal Mukosel Olgusu: Nadir bir Olgu

ABSTRACT

Frontal mucocele usually presents with visual complaints like diplopia, diminution of vision, visual field defect, ptosis, orbital swelling, retro-orbital pain, displacement of eye-globe and proptosis. Very rarely it can present as a subcutaneous swelling. To the best of the authors' knowledge, only two cases of frontal mucocele presenting with a forehead mass have been reported in the western literature. Authors report an unusual case of frontal mucocele in a 53-year-old female who presented with painless slowly progressive subcutaneous swelling of five-year duration on the forehead. The case is discussed and the pertinent literature is reviewed.

KEY WORDS: Mucocele, Frontal, Orbital extension, Intracranial extension, Subcutaneous mass

ÖZ

Frontal mukosel genellikle görme ile ilgili semptom ve bulgularla belirti verir; bu bulgu ve semptomlar çift görme, görme keskinliğinde azalma, görme alanı defektleri, pitozis, orbital şişme, göz arkasında ağrı, göz küresinin normal anatomik yerleşiminin bozulması ve propitozistir. Bu patoloji çok nadiren alında ciltaltı kitleleri olarak bulgu verir. Yazarın araştırmasına göre; batı literatüründe alın bölgesinde localize olmuş mukosel vakası toplam 2 kez yayınlanmıştır. Bu yazıda 5 yıldan bu yana alında, cilt altı dokusunda ağrısız şişliği olan ve bu şişliği giderek artan 53 yaşında bir kadın hasta sunulmaktadır. Vaka ilişkili literatür eşliğinde tartışılmıştır.

ANAHTAR SÖZCÜKLER: Cilt altı kitleleri, Frontal, Mukosel, Kafa içi yayılım, Orbital yayılım

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INTRODUCTION

Mucoceles are mucus-containing benign cystic lesions lined with pseudo-stratified epithelial lining, which usually develop after chronic obstruction of the ostia of paranasal sinuses. The ostia of paranasal sinuses can be blocked by inflammation, allergy, polyps, bony tumor or rarely after surgery. Mucoceles mostly involve the frontal and ethmoid sinuses (8). They are gradually progressive lesions that grow by expanding, moulding, displacing and destroying the surrounding bony and soft tissues. They can erode through the surrounding bone and spread into intracranial as well as the intraorbital compartment. Frontal sinus mucoceles can also very rarely extend into the subcutaneous region and can present as a forehead mass (1, 11). The authors report an unusual case of frontal mucocele with cranio-orbital extension, presenting with orbital swelling with forehead extension.

CASE REPORT

A 53-year-old female from a remote village presented to our outpatient clinic with dull headache in the left frontal region associated with slowly progressive swelling of the left forehead and adjoining supraorbital region. She did not recall any preceding trauma or vomiting. She had not undergone any paranasal sinus surgery.

Physical examination of the patient on admission revealed no abnormalities except a deviated nasal septum. On neurological examination, her visual acuity was 6/6 in both eyes. The left eye globe was pushed downward and outward. The eyeball movements were restricted in upwards and medial gaze. She also had mild conjunctival chemosis and ptosis in the left eye. The rest of the neurological examination was within normal limits. Local examination revealed a swelling in left supraorbital and adjoining forehead region that was non-tender, non-pulsatile, and free from the overlying normal skin, extending into left orbit (Figure 1). There was no ulceration or discharging sinus. However, definite bony defect was palpable around the superior and lateral aspects of the swelling.

Hematological and biochemical parameters were normal. Contrast-enhanced CT scan of the head revealed a non-enhancing, iso-dense lesion in left frontal sinus, extending into the left orbit and intracranially leading to displacement of the anterior cranial fossa dura. It also revealed destruction of the

orbital roof and posterior wall of the left frontal sinus (Figure 2 & 3).

She was prepared for surgery. Bicoronal scalp flap was raised and left frontal craniotomy performed. The mucocele was completely excised along with removal of the inflamed thickened mucosa of the ethmoid sinuses. The sinuses were packed with spongisten and bone wax soaked in betadine. Exteriorization of sinuses was carried out with the help of vascularised pericranium graft and biological glue. The orbital roof and superior orbital margin were reconstructed using split bone graft from the left frontal bone. Axial bone reconstruction image on computerized tomography scan in the postoperative

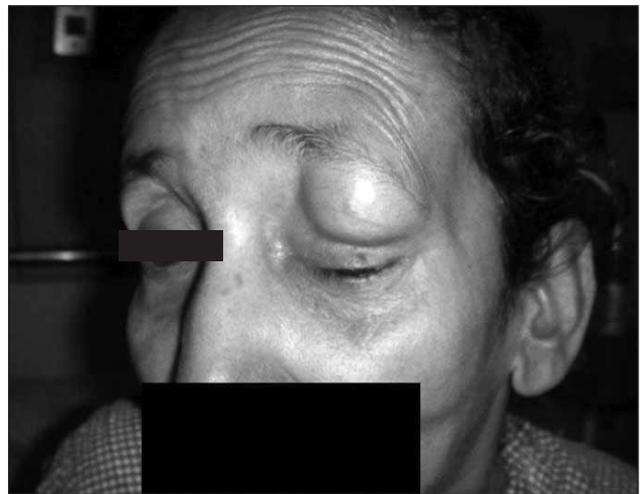


Figure 1: Clinical photograph showing mucocele causing left orbital and forehead subcutaneous swelling.

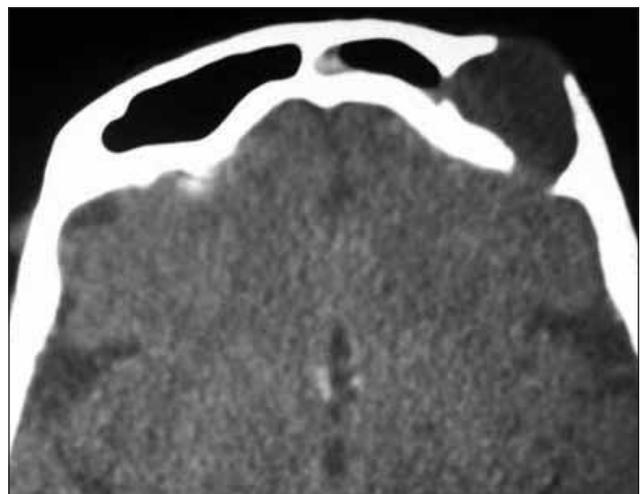


Figure 2: Axial computerized tomography scan showing frontal mucocele with intraorbital extension displacing the dura of the anterior cranial fossa .

period showed reasonably good alignment of bone graft with acceptable cosmetic outcome for the elderly lady (Figure 4).

The postoperative period was uneventful and the patient was discharged on the fifth post-operative day. She was doing well at the last follow-up three months after the surgery.

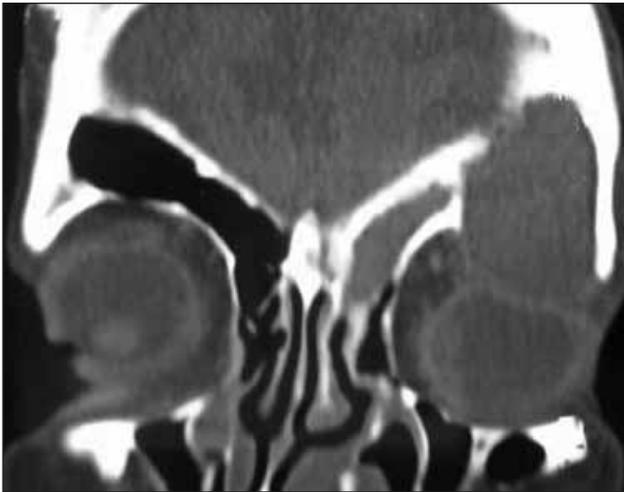


Figure 3: Coronal computerized tomography scan showing frontal mucocele extending into the left orbit with displacement of the globe downward. There is also erosion of the left orbital roof and posterior wall of the frontal sinus.



Figure 4: Post-operative axial computerized tomography scan showing reconstructed orbital roof with reasonably good alignment of bone graft.

DISCUSSION

Mucoceles are the benign cystic lesions. These lesions develop due to progressive accumulation of mucus inside the paranasal sinuses as a result of chronic or intermittent obstruction of their ostia. The causes of blockage of paranasal ostia include inflammatory sinusitis, allergy, polyp and trauma and rarely past surgery.

Mucoceles commonly involve the frontal sinus, maxillary sinus or anterior ethmoid sinus and rarely the posterior ethmoid or sphenoid sinus (1). Frontal sinuses are the most common site for mucoceles and these can be frontoethmoidal or frontal only, but bilateral frontal involvement is rare (2, 9). These lesions are usually observed in the fourth to sixth decade of life. No gender preference has been observed. Gradual distension, thinning and erosion of the bony wall of the sinus are caused by progressive accumulation of mucoid material. The mucocele can extend into the orbit or intracranial compartment by eroding the bony limits and producing bony defects. This may be the most likely pathogenesis in our case secondary to a deviated nasal septum. A ruptured intracranial mucocele can present with meningitis, meningoencephalitis, brain abscess, seizures or cerebrospinal fluid (CSF) fistula.

Mucoceles can present with diminution of vision, visual field defect, diplopia, orbital swelling, retro-orbital pain, displacement of eye globe, ptosis, and proptosis (4, 6). Very rarely these lesions can present as a forehead swelling. To the best of authors' knowledge, only two cases with forehead swelling caused by giant frontal mucoceles have been reported in the western literature (1,11). Tan CSH et al (11) reported a 33-year-old female presenting with blurring of the inferior visual field in the left eye, associated with periorbital swelling and a painless subcutaneous forehead mass. Akiyama M et al(1) reported a similar case in a 57-year-old female, who presented with a history of an asymptomatic subcutaneous tumor on the forehead for three-months. The swelling was 3 cm in diameter, on the mid- to left-side of forehead. Computerized tomography (CT) images showed a cystic mass demarcated from the subcutaneous area on the forehead caused by expansion of the frontal sinus by the mucocele.

Computerized tomography (CT) is diagnostic for paranasal sinus mucocele (10) but magnetic

resonance imaging (MRI) is useful in infected cases to find out the exact intracranial extension and to rule out lesions such as chondromyxoma, cystic hypophyseal adenoma, schwannoma and retrobulbar cyst.

The definitive treatment of mucocele is surgery. Surgical treatment of mucoceles can be accomplished with a minimally invasive endoscopic procedure or craniotomy with craniofacial surgery. During craniotomy and craniofacial surgery, as performed in our case, complete excision of mucocele and complete extirpation of the mucus membrane is done along with obliteration of the sinuses with gel foam, muscle and biological glue and exteriorization of sinuses through a transcranial approach. Lai et al have used the transcranial approach for the management of frontoethmoidal mucocele (5). Endoscopic surgery has increased the safety and efficacy of intranasal marsupialization for the treatment of mucoceles in all paranasal sinuses (3). Selective outer table craniotomy has also been described to expose the frontal sinus cavity while carefully preserving the inner table, with radical removal of the mucocele mucosa for frontal mucocele without any intracranial or intraorbital extension (12). Some surgeons prefer the combined endoscopic and craniotomy approach for the treatment of frontal mucoceles (7). Endoscopic sinus surgery combined with transcranial surgery is advisable in cases of giant frontal mucocele. A vascularised local pericranial graft is effective in the prevention of anterior cranial fossa contamination. The bony defect may be reconstructed with the help of autologous cranial bone graft, as performed in our

case. Methylmethacrylate and porous polyethylene can also be used for reconstructing the bony defect after such surgery.

REFERENCES

1. Akiyama M, Inamoto N, Hashigucci K: Frontal mucocele presenting as a subcutaneous tumour on the forehead. *Dermatology* 199(3):263-264, 1999
2. Arrué P, Kany MT, Serrano E, Lacroix F, Percodani J, Yardeni E, Pessey JJ, Manelfe C: Mucoceles of the paranasal sinuses: uncommon location. *J Laryngol Otol* 112(9):840-844, 1998
3. Har-El G: Endoscopic management of 108 sinus mucoceles. *Laryngoscope* 111(12):2131-2134, 2001
4. Hayasaka S, Shibasaki H, Sekimoto M, Setogawa T, Wakutani T: Ophthalmic complications in patients with paranasal sinus mucopyoceles. *Ophthalmologica* 203(2):57-63, 1991
5. Lai PC, Liao SL, Jou JR, Hou PK: Transcranial approach for the management of frontoethmoid mucoceles. *Br J Ophthalmol* 87(6):699-703, 2003
6. Leventer DB, Linberg JV, Ellis B: Frontoethmoidal mucoceles causing bilateral chorioretinal folds. *Arch Ophthalmol* 119(6):922-923, 2001
7. Natvig K, Larsen TE: Mucocele of the paranasal sinuses. A retrospective clinical and histological study. *J Laryngol Otol* 92(12):1075-1082, 1978
8. Ormerod LD, Weber AL, Rauch SD, Feldon SE: Ophthalmic manifestations of maxillary sinus mucoceles. *Ophthalmology* 94(8):1013-1019, 1987
9. Rao ABN: A Case of Bilateral Complicated Frontal Mucocele. *Pract. Oto-Rhino-Laryngol* 28(1):117-120, 1966
10. Rao VM, Sharma D, Madan A: Imaging of frontal sinus disease: concepts, interpretation, and technology. *Otolaryngol Clin North Am.* 34(1):23-39, 2001
11. Tan CSH, Yong VK, Yip LW, Amrith S: An unusual presentation of a giant frontal mucocele manifesting with a subcutaneous forehead mass. *Ann Acad Med Singapore* 34:397-398, 2005
12. Wang KW, Hsu HC, Lu K, Chen HJ, Liang CL: Outer table craniotomy for frontal sinus mucocele. *J Craniofac Surg* 15(5):869-73; discussion 873-874, 2004