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OLGU SUNUMU / *CASE REPORT*

Frontal Sinus Osteoma with Orbital Extension: A Case Report

Orbital Uzanım Gösteren Frontal Sinus Osteomu: Bir Olgu Sunumu

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ABSTRACT

A 56 years old male presented with a history of intermittent headache for 10 years and protrusion in his left eye downwards and outwards the last 3 years. Ophthalmological examination revealed diplopia and restriction in upward gaze. Computed Tomography scan showed a mass originating from left frontal sinus with an extension to the orbit. The mass was excised and histopathological examination revealed that it was compatible with mature type osteoma. In this report, we presented a case including the diagnosis and treatment of a frontal sinus osteoma with an extension into the orbit which is a very rare clinical entity in existing literature.

Key words: *osteoma; orbital diseases; frontal sinus; exophthalmos*

ÖZET

Elli altı yaşında erkek olgu, 10 yıldır aralıklarla tedaviye cevap vermeyen başağrısı ve son 3 yıldır sol gözde dışa ve aşağı doğru yer değiştiren çıkıntı şikayetleri ile kliniğimize başvurdu. Olgunun oftalmik muayenesinde diplopi ve yukarı bakış kısıtlılığı mevcuttu. Bilgisayarlı tomografi incelemesinde sol frontal sinüsten orbitaya uzanan kitle tespit edildi. Kitle eksize edildi ve yapılan histopatolojik incelemede matür tip osteoma ile uyumlu olduğu tespit edildi. Bu olgu sunumunda, literatürde oldukça nadir olan orbitaya uzanımı olan frontal sinüs osteomalı olgunun tanı ve tedavisi bildirilmiştir.

Anahtar kelimeler: *osteom; orbital hastalıklar; frontal sinus; ekzoftalmus*

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Introduction

Osteomas are relatively rare, benign bone neoplasms and usually originate from the craniofacial and paranasal sinuses. Paranasal sinus osteomas are the most common slow-growing and benign tumors of paranasal sinuses[1]. They usually arise from the frontal sinus and are generally detected incidentally in sinus radiography because of their asymptomatic characteristics[2]. Previously it has been reported that osteomas become symptomatic most commonly in fifth and sixth decades[3]. In this report, we presented a case including the diagnosis and treatment of a frontal sinus osteoma with an extension into the orbit.

Case Report

A 56 year old male presented with a history of intermittent headache for 10 years. The headaches had usually been experienced in the morning and had continued throughout the day. They had been unresponsive to analgesics and had recurred at 15–30 day intervals.

The patient had noticed an enlargement in his left eye. The enlargement had protruded outwards and downwards for the last three years. Previously, the patient have had a medical treatment with a diagnosis of sinusitis, however his complaints had not improved. He have had a history of trauma when he was 7 years old.

We performed a complete ophthalmologic examination. Best corrected visual acuity was 20/20 OU and there was not any pathological finding on bio-microscopic examination. The intraocular pressures were 17 mmHg and 21 mm Hg in the right and left eyes, respectively. The patient had diplopia and upward gaze

was slightly restricted in the left eye. Hertel exophthalmometry showed 4 mm exophthalmos in the left eye (Figure 1).

Computed tomography (CT) scan of paranasal sinuses revealed a 2x2x4 cm sized polylobulated dense mass which was arising from the left frontal sinus with an extension to the orbit. It was compatible with osteoma with its intense appearance (Figure 2). We consulted the patient with the Neurosurgery Department. Due to the skull base retention and large size of the lesion, after lifting a bicoronal flap with a superior approach to the orbit and frontal sinus, the mass was fragmented and removed with tours.

Macroscopically, the collected specimens looked like ivory. Histo-pathological examination of the specimens revealed light cream colored, dense, mature, compact cortical type haversian bone fragments. There were occasional immature bone tissue regions within the connective tissue (Figure 3). Loose connective tissue, adipose tissue and vascular structures were detected at the interosseous space. These microscopic findings confirmed the diagnosis of a mature type osteoma.

The patient showed an excellent recovery in the postoperative period. Proptosis, diplopia and headache resolved while the ocular movements remained intact (Figure 4).

Discussion

Osteomas are the most common tumors of the paranasal sinuses (noted in up to 3% of the coronal CT images), but secondary extension in or primary involvement of the orbit is rare[4]. They are initially asymptomatic and almost always originate from the frontal sinus. They are generally detected incidentally in sinus radiography and CT with a rate of 1% and 3%, respectively[1]. Previously, osteomas were reported as the most common benign tumors of the bone. They are often observed in fifth and sixth decades with a male predominance of 2 to 1 [3,5].

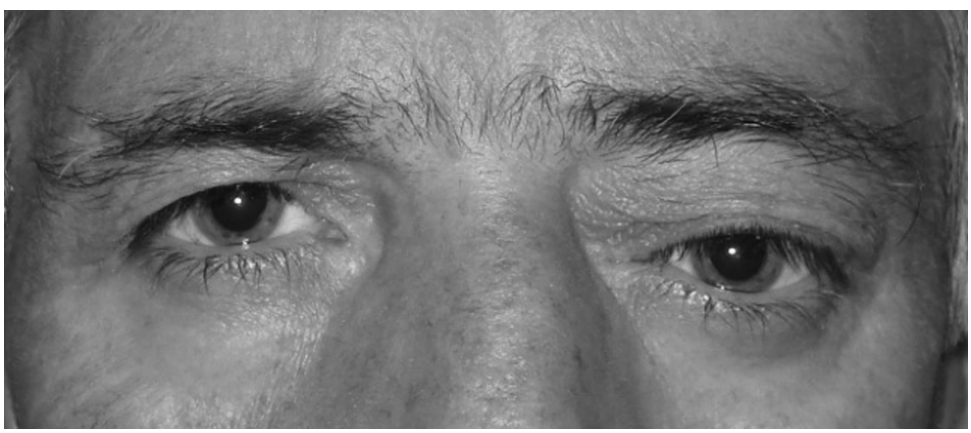

Figure 1. *Patient had left proptosis and hypotropia before surgery.*

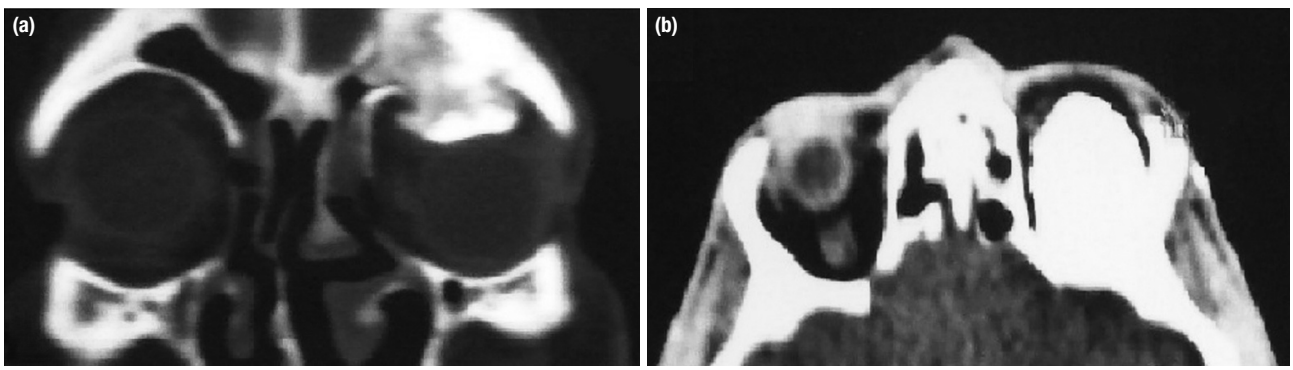

Figure 2. a, b. *Coronal CT scan revealed a left frontal sinus osteoma extending into the orbit (**a**). Axial CT scan (**b**).*

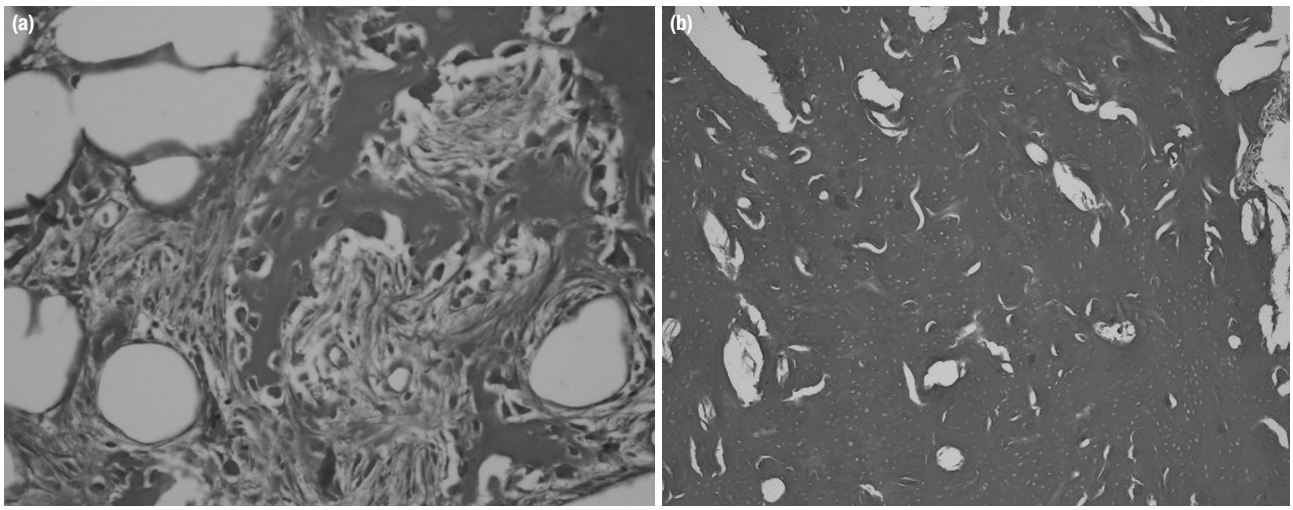

Figure 3. a, b. *Microscopic examination showed occasional immature bone tissue regions within the connective tissue and compact cortical type haversian bone fragments.*

Figure 4. *Patient had an excellent recovery postoperatively.*

There are several theories aiming to explain the formation of the osteomas. Traumatic, inflammatory and embryologic etiologies are the most popular hypothesis. In our case, there was a history of trauma when the patient was seven years old.

Paranasal sinus osteomas are generally asymptomatic. They may become symptomatic with increasing volumes, however the location and extension of the tumor are also important. If they extend into the orbit, they may cause displacement of the globe, proptosis, restriction of extraocular movements and nasolacrimal duct obstruction[6]. If they extend into cranial fossa they may cause meningitides, cerebrospinal fluid leakage, pneaumatocele or brain abscess[7,8].

Histologically, these tumors consist of irregular osseous trabecular and fibrovascular tissues[9]. They are divided into ivory, mature and mixed types according to their histopathological appearance. The histopathologic findings in our patient were compatible with a mature type of osteoma.

Osteomas radiologically appear as homogenously calcified, lobulated, sharply defined tumors that fill the internal contour of the sinus of origin[6]. CT is an excellent diagnostic method for detecting the origin, size and integrity of bony walls of an osteoma. Magnetic Resonance Imaging (MRI) is useful in the diagnosis of soft tissue complications adjacent to the lesion such as invasion to orbital apex or skull base. In our case, CT revealed a lobulated and sharply defined left frontal sinus osteoma.

Management of an osteoma depends on its clinical features. Observation and follow up is recommended

in most asymptomatic cases. When osteomas become symptomatic, the symptom is usually related to the location and extension of the tumor. The most common symptom is headache. Additionally, they may cause periorbital pain, rhinorrhea, anosmia, sinusitis and proptosis[10].

Surgical intervention is reserved for symptomatic cases or the tumors located in the sphenoid sinus and threatening the optic canal or orbital apex[6,10,11].

Surgical intervention can be carried out via either endoscopic or open surgery. This resection may be performed in a single block or by fragmentation. The surgical approach depends on the osteoma stage, determined by the various imaging examinations[12,13]. Complete surgical removal is not always necessary, and partial sculpting may relieve symptoms and cause less surgical morbidity in selected cases[4]. Endoscopic surgery is recommended for small and medium sized tumors and it reduces postoperative morbidity and hospitalization time. Surgical experience is needed to manage the potential peri-operative complications such as hemorrhage, inadequate control of the margins of the lesion. In this case, we preferred surgical excision via transcranial approach due to the size and extension of the osteogenic mass.

Conclusion

Although osteomas are rare orbital masses, they should be taken under consideration in the differential diagnosis of space occupying lesions of the orbit. Annual clinical and radiological follow up is recommended for asymptomatic cases and surgical intervention should be reserved for symptomatic cases.

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