

Frontal Bone and Epidural Tuberculosis

Frontal Kemik ve Epidural Tüberküloz

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ABSTRACT

Cranial bone and epidural tuberculosis is rare manifestation extrapulmonary tuberculosis. The incidence of tuberculosis of calvaria is on the rise in developing countries because of malnutrition, poor socioeconomic conditions, and immunodeficiency. We present the clinical features, radiology, histopathology, and surgical findings of a case of tuberculosis of the frontal bone with epidural extension. A 46 year-old female had presented with a history of painless right frontal swelling for the previous 4 months. The patient was operated on at a peripheral center for swelling in the right frontal region. In postoperative period, a leak that did not reply to nonspecific antibiotic therapy developed on the lesion. Right frontal epidural effusion was found in the patient who presented our clinic. Histopathological and microbiological examination suggested a diagnosis of tuberculosis.

KEY WORDS: Tuberculosis, Calvaria, Epidural effusion

ÖZ

Kranyal kemik ve epidural tüberküloz, ekstrapulmoner tüberkülozun nadir bir formudur. Fakat malnutrusyon, kötü ekonomik durum ve immün yetmezlik nedeniyle gelişmekte olan ülkelerde kalvarial tüberküloz insidensi yüksektir. Biz epidural uzanımı olan frontal kemik tüberkülozlu bir hastanın klinik özellikleri, radyolojisi, histopatolojisi ve cerrahi bulgularını sunuyoruz. 46 yaşındaki bayan hasta, 4 ay önce ağrısız sağ frontal şişlik ile prezente oluyor. Hasta periferdeki bir merkezde sağ frontal alandaki şişlik nedeniyle opere edilmiş. Ancak operasyondan sonraki dönemde nonspesifik antibiyotik tedavisine cevap vermeyen akıntı gelişmiş. Kliniğimizde, hastada sağ frontal epidural effüzyon saptandı. Histopatolojik ve mikrobiyolojik muayenede tüberküloz olduğu tespit edildi.

ANAHTAR SÖZCÜKLER: Tüberküloz, Kalvarium, Epidural effüzyon

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INTRODUCTION

Tuberculosis is a frequently seen pathology in developing countries with low socioeconomic conditions. (4,9) Many types of neurotuberculosis have been described. The most common intracranial forms are tuberculous meningitis and tuberculomas. Calvarial, cranial epidural and subdural tuberculosis are rare (1,2,3). We present a case in which scalp swelling had been determined in the frontal region previously and had been resected with a prediagnosis of sebaceous cyst. The patient had developed a chronic leak unresponsive to nonspecific antibiotic therapy and consequently presented at our clinic where calvarial-epidural tuberculosis was determined.

CASE DESCRIPTION

A 46-year-old female presented with a history of painless right frontal swelling for the last 4 months. The suspicion was of a sebaceous cyst in the right frontal region. She was operated on at a peripheral center for the swelling. Histopathology and microbiological examination was not performed for the lesion. An obstinate chronic leak developed in the lesion region following the biopsy and did not respond to nonspecific antibiotic treatment. The patient presented at our clinic because of the leak on hairy skin on the right frontal region and there was 3 cm long, leaking old scalp wound. Neurological examination revealed no abnormalities. Brain computed tomography (CT) scan showed the right frontal bone lytic lesion, adjacent extra-axial hyperdense mass and heterogeneous enhancement with contrast (Figure 1A,B). Routine hematological tests were normal except for an elevated erythrocyte sedimentation rate (ESR) (60 cm at the end of the first hour). Chest X-ray was normal. A right frontal craniotomy was performed and the part of the bone with osteitis was removed. The lesion, which was firmly adherent to the dura, was successfully peeled off the intact dura. The dura was thickened and showed congested vessels. The bone flap was replaced. Histopathological examination suggested the diagnosis of tuberculosis. The Mycobacterium tuberculosis bacillus was cultured from the pus at 42 days. Follow-up MRG on the postoperative 5th day showed no epidural effusion but the frontal dura still showed extensive contrast material retention (Figure 2). Antitubercular therapy, consisting of isoniazid (300 mg/day), rifampicin (600 mg/day),

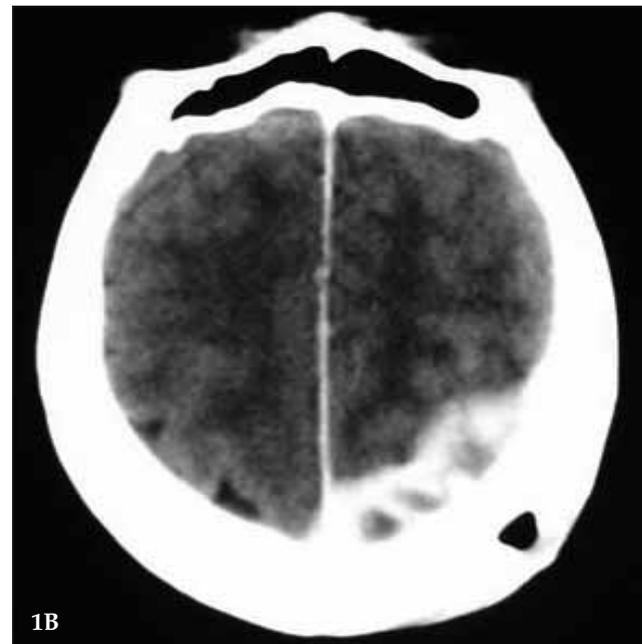
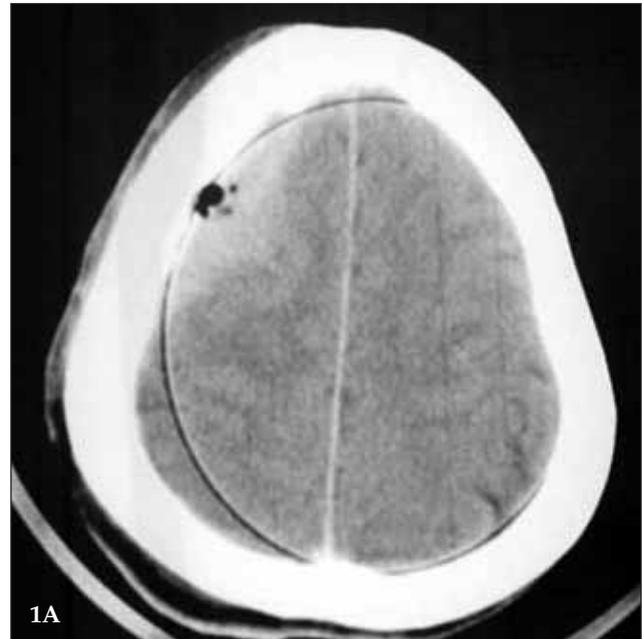


Figure 1A,B: CT scan axial and coronal images with contrast showed a hyperdense mass lesion involving the right frontal epidural region.. Bony destruction and air are present in the frontal bone.

ethambutol (1200 mg/day), and pyrazinamide (1500 mg/day) was started. There was complete resolution of the lesion by cranial MRG (Figure 3A,B) after three months. Antitubercular treatment was continued for the full 18 months. The patient showed no recurrence or reactivation of disease.

DISCUSSION

Tuberculosis osteomyelitis can develop at any bone in the cranium. Calvarial tuberculosis develops mostly in the parietal and frontal areas besides the occipital, sphenoid, and ethmoid bone, clivus and

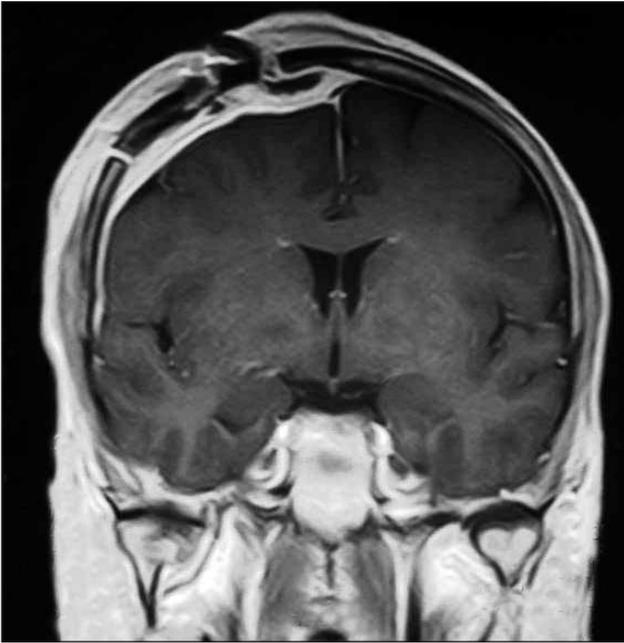


Figure 2: Cranial MRG on the 5th postoperative day shows that the effusion in the frontal-epidural space has resolved yet extensive dural contrast retainment exists.

other areas (4,6,7,9). Young individuals are more susceptible to calvarial tuberculosis. The patients ranged in age from 11 to 20 years in one study (5). A history of trauma or surgery was present in 42% and 7% of the patients respectively (5). The most common symptoms were scalp swelling (39-52%), sinus formation (22%), generalized tonic/clonic seizures (4%), mild left hemiparesis, and meningitis (2%) (4,5).

Cranial epidural tuberculosis is rare and originates from a focus in the bone osteomyelitis that later extends epidurally (2,8). The infection may start in the skull with secondary extension subcutaneously and scalp swelling develops (8). Sutures are not strong barriers to spread but the dura usually prevents intradural extension. The dura mater is intact (80%) but is thickened and shows congested vessels and areas of necrosis (4).

Isolated calvarial tuberculosis is rare (7). Calvarial tuberculosis can be seen with pulmonary tuberculosis, tuberculous osteomyelitis involving

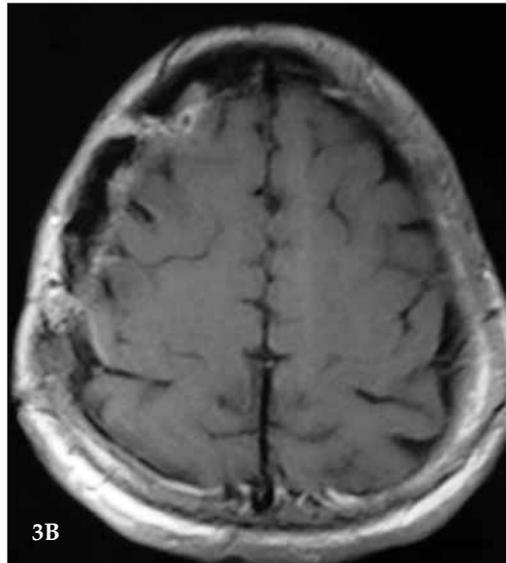
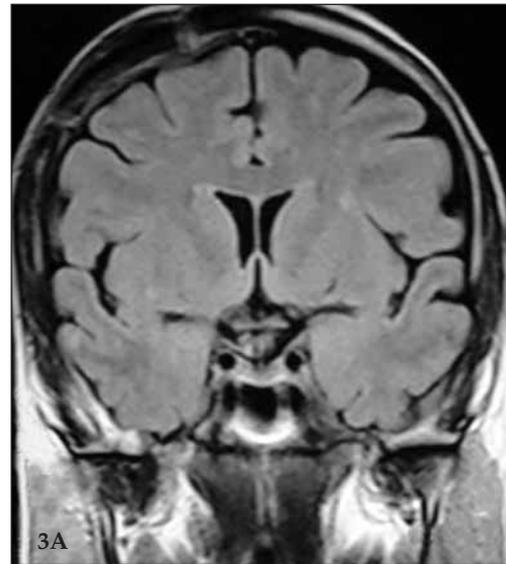


Figure 3 A,B: MRI three months after starting antitubercular treatment showed resolution of the epidural mass lesion in the frontal region.

other bones, cervical lymphadenitis and renal and intestinal tuberculosis (2,3). Tuberculosis spreads by the hematogenous route, by direct extension from neighboring tissue, and through secondary infection in the operative wound by *Mycobacterium tuberculosis* (1,7)

Skull radiographs of our case showed solitary, well defined lytic lesions (2). CT showed lesions involving the entire thickness of the calvarium (involving both inner and outer tables) and accompanying contrast-enhancing soft tissue. CT findings have been reported as subgaleal soft tissue

swelling (38%), extradural soft tissue (22-53.2%), calvarial destruction (36%), parenchymal involvement (5-11.9%), and sinus formation (22%) (4,5). MRI shows a high signal intensity soft tissue mass within the defect in bone, and peripheral capsular enhancement on the contrast-enhanced image (5).

Treatment of calvarial tuberculosis is surgical excision and antitubercular therapy. Surgery is reserved for patient with large extradural collections causing neurological deficits or large scalp swellings leading to fulminant secondary infections (5). In addition to surgery, all patients receive antitubercular therapy for 18 months-2 years (3,4,5,7).

It may be difficult to differentiate a calvarial tuberculosis bone defect from other forms of eosinophilic granuloma, tumor and osteomyelitis in patients who don't have a history of extracranial tuberculosis (8). It is significant for the investigation and treatment to remember that such a pathology exists as insufficient investigation causes misdiagnosis and mistreatment as in our case. Incorrectly diagnosed cases will not respond to nonspecific antibiotic therapy for the leak. It is important to employ cranial CT in patients with scalp swelling, keep tuberculosis in mind while microbiological examination is performed in

patients with epidural effusion, and always send the materials obtained for histopathological examination. Patients with cranial tuberculosis will only benefit from protracted combined antitubercular therapy.

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