

FRONTAL BONE OSTEOMYELITIS: A DISCUSSION OF TWO CASES

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ABSTRACT

Osteomyelitis of frontal bone (pott's puffy tumour) is a rare clinical entity. It usually occurs due to complications of trauma and sinusitis. Early diagnosis and prompt intervention is necessary to prevent CNS complications to prevent morbidity and mortality. Osteomyelitis of frontal bone requires abscess drainage and removal of infected bone combined with antibiotic treatment. Prevalence of mortality from complications is 20-40%. Prevalence of osteomyelitis of skull is about 1.5% of all osteomyelitis. Here we are presenting two cases of frontal bone osteomyelitis as a complication of rhinosinusitis.

KEYWORDS : Osteomyelitis, frontal bone, pott's puffy tumour, rhinosinusitis

INTRODUCTION :Osteomyelitis is inflammation of bone or bone marrow, usually due to infection. Most commonly affected bones are generally long bones (Tibia, Fibula, Femur).It can also occur in Pelvis and vertebra. Osteomyelitis of skull bones is rare clinical presentation. It usually occurs due to trauma in children and due to sinusitis in adults. It usually results as complication of rhinosinusitis or by retrograde thrombophlebitis. Early diagnosis and treatment is necessary otherwise it may produce intracranial and intraorbital complications. Brain abscess is most common complication. It may be associated with subperiosteal abscess. Patient may complain of severe headache, nasal discharge, vomiting, vertigo, fever etc. Radiological investigations show reduction in bone density and islands of normal bone. In advanced stages there is erosion of the frontal bone. Here we are presenting two cases of frontal bone osteomyelitis as a complication of rhinosinusitis.

CASE REPORT – 1 A 40 year old male patient from Ratlam, Madhyapradesh presented to Dhiraj Hospital, Piparia in July -2017 with two weeks history of severe frontal headache, swelling over forehead, swelling around both eyes, nausea and vomiting. On examination, he had warm and tender swelling over forehead and anterior half of the scalp. Swelling was extending around the both eyes causing periorbital edema and difficulty in eye opening. Patient had intermittent fever without chills and rigors. Patient was conscious, cooperative and well oriented to time, place and person. Neurological, respiratory and cardiovascular system examination was normal. On anterior rhinoscopy and diagnostic nasal endoscopy there was mild deviated nasal septum towards left side. Frontal sinus tenderness was present. There was tender, cystic swelling over forehead with erythema of the overlying skin. A provisional diagnosis of frontal bone osteomyelitis was made. CT scan PNS with contrast was also done. (Image 1)

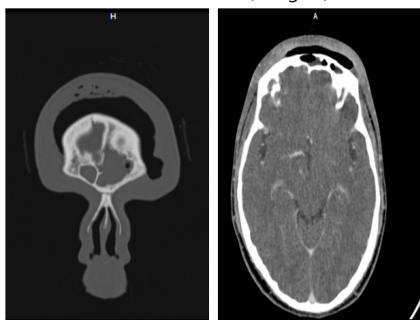


Image 1: CT scan PNS showing subcutaneous collection of air within frontal region of scalp adjacent to frontal sinus, on post contrast study mild enhancement of soft tissue, possibility of infective etiology. There was erosion with bony defect in right frontal sinus with small pneumocephalus.

Aspiration was attempted with wide bore needle and approximately 100 ml of frank pus with some amount of air was aspirated from swelling. After aspiration of pus the swelling regressed gradually. Intravenous antibiotics and symptomatic pain killer drugs were given. Incision and drainage with debridement of affected necrotic galleal flap was done. Frontal sinus trephination through bilateral supra ciliary incision revealed erosion of outer table of right frontal sinus. Necrotic bone and sequestrum was drilled out with adequate clearance of bilateral frontal sinus. (Image 2) There was also erosion noted in posterior table of right frontal sinus with dural exposure. There was no evidence of extradural abscess. Endoscopic bilateral uncinectomy were done. Right maxillary sinus ostia widened and cleared of disease. Bilateral frontal sinus recess was obliterated with polypoidal mucosa which was cleared of disease. Adequate drainage of bilateral frontal sinus confirmed with combined trephination and endoscopic approach. Wound was closed with primary closure and fixation of a corrugated drain which was removed on the 2nd post-operative day. Postoperative intravenous antibiotics were given. Patient was discharged after 3 days of surgery with a course of oral antibiotics.

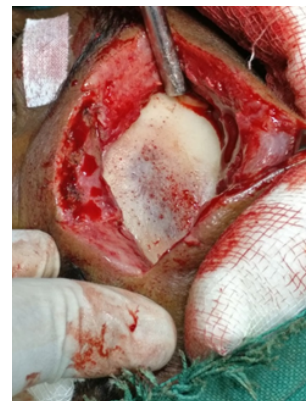


Image 2: Intraoperative image suggestive of osteomyelitic frontal bone

CASE REPORT -2

A 34 year male patient from Ratlam, Madhya Pradesh, presented to Dhiraj Hospital, Piparia in July -2017 with 15 years history of discharging sinus over forehead, swelling over forehead and left side nasal obstruction.

On examination, he had discharging fistulous tract over forehead more towards left side. There was no any swelling around the fistula. Patient had history of left sided nasal obstruction and bilateral ear discharge. Patient had past history of pulmonary tuberculosis, for which he had completed 9 month course of AKT 2 years ago. Patient had no history fever, headache, vomiting, and vertigo. On anterior rhinoscopy and diagnostic nasal endoscopy there was mild deviated nasal septum towards right side and left side concha bullosa. Frontal sinus tenderness was present. There was chronic thickening of skin around the fistula. A provisional diagnosis of fungal rhino sinusitis with frontal bone osteomyelitis was made. CT scan PNS with contrast was also done. (Image 3)



Image 3: CT scan PNS showing cortical thickening with irregularity involving left frontal sinus with defect in anterior and posterior wall of left frontal sinus. Brain parenchyma was normal.

Bilateral FESS with left Frontal sinus trephination revealed erosion of outer table of left frontal sinus. Fistulous tract was identified dissected from surrounding tissue going into left frontal sinus eroding its anterior wall. Necrotic bone and sequestrum was drilled out with adequate clearance of left frontal sinus. (Image 4) There was no evidence of extradural abscess. Bilateral uncinectomy was done. Maxillary sinus ostia was widened and cleared of disease. Bilateral anterior and posterior ethmoid air cells were cleared of disease. Bilateral frontal sinus recess was covered with polypoidal mucosa, widened and cleared of disease. Adequated drainage of bilateral frontal sinus confirmed with combined trephination and endoscopic approach. Wound was closed with primary closure. Postoperative intravenous antibiotics were given. Patient was discharged after 3 days of surgery with a course of oral antibiotics.



Image 4: Intraoperative image showing osteomyelitic frontal bone and infected bone being removed

DISCUSSION

In case 1, history and clinical presentation suggested early osteomyelitis of frontal bone with subgaleal abscess. Although there was erosion in inner table of frontal sinus, there was no evidence of extradural abscess. Patient had no sign of intracranial brain abscess. In this patient frontal sinusitis was the most likely cause for osteomyelitis (Pott's puffy tumour) as there was no history of trauma or cellulitis in face prior to presentation of symptoms.

In case 2, patient had relatively long history of discharging sinus over forehead which presented with fistula formation and fibrosis and lump formation around the tract. There was also sclerosis of frontal bone due to long standing infection. Since outer table of frontal bone was eroded and inner table was intact, patient had no any signs of intracranial infection. Chronic sinusitis was the cause of osteomyelitis in this case.

Pott's puffy tumour can be related to any skull bone osteomyelitis, mostly those bones which are diploic bones. Frontal sinus is most commonly involved because there is very thin plate of bone between bone marrow and frontal sinus and there is common valveless diploic venous drainage system for frontal sinus mucosa, frontal bone and bone marrow. The bone separating the frontal sinus from the anterior cranial fossa and the orbit are often quite thin and the interrelated venous drainage system of these areas form the anatomic basis of serious orbital and intracranial complications^[1]. Most cases of skull osteomyelitis are related to trauma and spread from adjacent sites especially the frontal sinus. There are occasional reports of haematogenous origin of infection^[2]. Any frontal sinus infection can invade the marrow cavity and cause osteomyelitis which subsequently may erode outer and inner table of frontal bone and form subperiosteal and extradural abscess respectively. Usually such patients have no any preceding history of upper respiratory tract infection or any nasal symptoms making difficulty in making diagnosis of frontal sinusitis. Major causative organisms are staphylococcus aureus, streptococcus and anaerobes. High dose of intravenous antibiotics which penetrate CNS and having good Gram positive and anaerobic spectrum are indicated for 2-3 weeks along with prompt surgical drainage of pus and removal of infected tissues with debridement of sequestrum is the mainstay of the treatment. Postoperative antibiotic prophylaxis is also recommended for up to 3 months for better surgical outcome. Such patients should be assessed periodically for development of any other CNS infections.

The diagnosing of intracranial complications of sinusitis requires a high index of suspicion, imaging of brain and paranasal sinuses and aggressive intervention^[3]. Urgent surgical evacuation of any intracranial collection is required. However surgical management of associated sinusitis remains controversial^[4]. The source of the infection must be eradicated. Delay in surgical intervention has been associated with prolonged hospitalization^[5].

CONCLUSION

Combined action of antibiotic therapy and prompt surgical intervention can reduce morbidity and mortality in frontal bone osteomyelitis. Although there is high risk of developing serious and even fatal complications despite improved antibiotics and surgical techniques.

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