

Frontal Bone Osteomyelitis in Adult

Kapil Mani KC,¹ Gopal Prasad Gnawali,¹ Raju GC¹

ABSTRACT

Frontal bone osteomyelitis is a rare clinical disease which occurs as a result of frontal sinusitis, penetrating injury on head, post-operative complication after sinus surgery and hematogenous spread from distant site. Early diagnosis, appropriate surgical debridement and antibiotic are keys to prevent from life threatening intracranial complications. We report a 63 years old male patient with osteomyelitis of outer cortex of frontal bone. The wound was thoroughly debrided after computer tomography scan showed an osteolytic lesion on outer table of frontal bone and antibiotic was continued for 2 months until inflammatory markers become normal.

Keywords: Frontal bone; Intracranial complications; osteomyelitis; pott's puffy tumour.

INTRODUCTION

Frontal bone osteomyelitis is a rare clinical disease which occurs as a result of frontal sinusitis, penetrating injury on head, post-operative complication after sinus surgery and hematogenous spread from distant site. Clinically, it is presented as soft fluctuant forehead swelling which is presumed as Pott's Puffy Tumor (PPT).^{1,2}

Complications related to the frontal bone osteomyelitis can be life threatening even though initial symptoms are subtle. Early diagnosis and appropriate intervention is crucial to prevent the intracranial extension of infection including meningitis, which if occurs impose great challenge to treat.³ Even though there are number of literatures regarding the frontal bone osteomyelitis secondary to frontal sinusitis which is usually assumed as Pott's puffy tumour, there are paucity of literatures describing the chronic osteomyelitis of frontal bone secondary to trauma.^{4,6}

The aim of this study is to report the chronic posttraumatic frontal bone osteomyelitis which is very rare clinical problem and appropriate intervention to prevent life threatening complications.

CASE REPORT

Sixty three years old male patient presented to our

hospital with complaint of discharging sinus through the right side of forehead above the eyebrow (Fig.1). He sustained the penetrating trauma on the same site 5 months before and treated in the local hospital with simple dressing and antibiotics without extensive debridement. Wound was healed for sometimes with use of antibiotics, however there was serous discharge on and off which was changed to pus discharge. Pus was draining spontaneously with multiple times a day. On examination, there was a dimple in right side of forehead with unhealed scar and discharge of pus on squeezing the wound. In addition, mild swelling of upper eye lid and slight bony tenderness were also present. He was suggested to do the X-ray head, complete blood count, blood sugar, erythrocyte sedimentation rate (ESR) and C reactive proteins (CRP). The X-ray and blood reports showed the insignificant findings except mild elevation off ESR and CRP. After that he was advised to do computer tomography scan (CT Scan) of head and frontal bone which showed the osteolytic lesion on outer cortex of frontal bone just above the right orbital bone without involvement of inner cortex of frontal bone and intracranial extension (Fig 2).

He was planned to the surgical decompression and debridement under local anesthesia. Under aseptic condition, incision was given horizontally over the wound site. Pus mixed granulation tissue was removed. Outer cortex of frontal bone was eroded at multiple sites

Correspondence: Kapil Mani KC, Mercy City Hospital, Butwal, Rupandehi, Nepal. Email: drkapil2007. kmkc@gmail.com, Phone: +9779851114502.

Author Affiliations

¹Mercy City Hospital, Butwal, Rupandehi, Nepal.

just under the discharging wound which was debrided thoroughly with small curate until the fresh bleeding surface of bone revealed (Fig. 3). Pus was sent for culture and sensitivity (C/S) as well as acid fast bacilli while granulation tissue was sent for histo-pathological examination. After surgery, patient was started 1.5 gram intravenous cefuroxime twice a day until the report of culture and sensitivity. Since C/S report did not show the growth of any organism, which may be due to repeated use of antibiotics by the patient, we continued the same intravenous antibiotic for seven days followed by oral antibiotic, clindamycin 300 mg twice a day for 6 weeks. At present situation, patient wound was healed and he was under antibiotic coverage for almost 3 months.



Figure 1. Showing discharge of pus from right side of frontal bone.

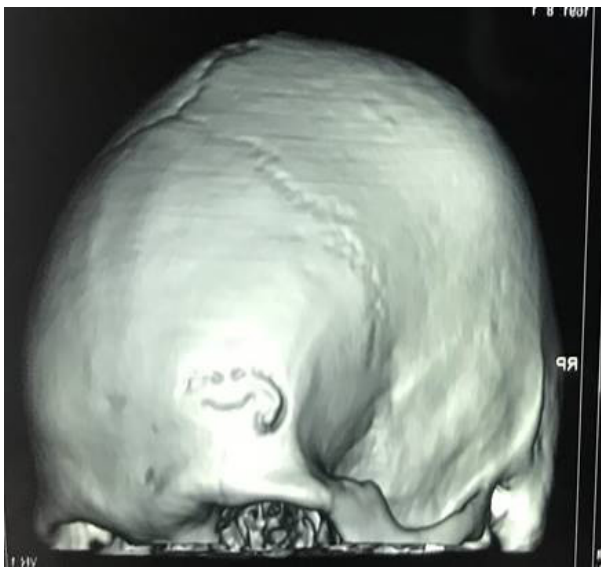


Figure 2. Showing osteolytic lesion in outer cortex of frontal bone on same site.



Figure 3. showing intra-operative picture of frontal bone with multiple defects on outer cortex after removal of necrotic tissue.

DISCUSSION

Soft tissue swelling on forehead secondary to trauma, sinusitis or as a complication of sinus surgery, which if persistent and non-resolving, should raise the possibility Pott's Puffy Tumor.^{4,7-9} Children as well as adolescents are most commonly affected and clinicians must be aware of possibility of life threatening intracranial complications as a result of frontal bone osteomyelitis.⁴

CT scan or Magnetic Resonance Imaging (MRI) of skull should be performed in urgent basis to early identify intracranial complications. ^{99m}Tc Technetium bone scanning will be a better option in comparison to CT scanning to detect early stage of osteomyelitis, however it lacks specificity in the context of acute sinusitis which causes increased bone turnover in adjacent frontal bone. Therefore, early surgical intervention with drainage of sinus and debridement of wound in case of post traumatic osteomyelitis is mandatory to avoid late intracranial complications. Initial empiric antibiotic should be broad spectrum with good intracranial penetration.¹⁰

The patient of this study has a posttraumatic frontal bone osteomyelitis who sustained small penetrating injury on

forehead 5 months before. Even though predisposing factors to cause the infection like diabetes, rheumatoid arthritis, immune suppressive and steroid use are absent in this case, he sustained persistent infection that cause destruction of outer table of frontal bone to cause established osteomyelitis. Before coming to our hospital, he was treated with intermittent antibiotics, however his condition did not improve, rather swelling, tenderness and pus discharge were increased in verged of life threatening intracranial complications.

Though various clinical conditions are associated with sub periosteal abscess of frontal bone, odontogenic sinusitis are rare. Min et al mentioned that frontal bone osteomyelitis may originate form maxillary sinusitis secondary to the severe dental caries, which should be aggressively managed especially in the cases with absent frontal wall bone that increases the risk of spread of inflammation.⁶ There are many other articles in the literature which mentioned the causes and complications associated with frontal bone osteomyelitis.^{11,12}

CONCLUSIONS

Frontal bone osteomyelitis is a rare clinical entity. Incidence of post-traumatic variant is even far less than those secondary to frontal sinusitis. Early diagnosis and appropriate treatment in the form of surgical debridement and broad spectrum antibiotic are keys to prevent from life threatening intracranial complications.

CONFLICT OF INTEREST

None

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