

Osteomyelitis of zygoma secondary to depressed fracture of parietal bone: Case report of a rare entity

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ABSTRACT

Osteomyelitis is an inflammatory condition of bone involving the medullary cavity, the Haversian system, and the adjacent cortex. According to literature review osteomyelitis of zygomatic bone secondary to the depressed fracture of the parietal bone never reported. Here we report a case of osteomyelitis of zygomatic bone which develops 3 month after the depressed fracture of parietal bone.

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Key words: Hematogenous osteomyelitis, rare, zygoma

INTRODUCTION

Osteomyelitis is an inflammatory process accompanied by bone destruction and caused by infecting microorganisms. Infection can be limited to a single portion of bone or can involve several regions such as marrow, cortex, periosteum, and surrounding soft tissue. Involvement of the bone in the middle third of the face is rare. Exogenous osteomyelitis is more common (47%) than hematogenous osteomyelitis (19%) or osteomyelitis secondary to vascular insufficiency (34%).^[1-8]

CASE REPORT

A 21-year-old male reported with a chief complaint of pus discharge and exposed bone on the right side of the face below eye since 6 months. Patient gave alleged history of blunt trauma to skull 9 months back after which a massive swelling developed in the scalp. On computed tomography (CT)-head, he was

diagnosed with depressed fracture of parietal bone with extradural hematoma [Figure 1]. Patient was put on parenteral antibiotics for 7 days and was kept under regular follow-up. After 1 month, hematoma did not resolve. Copious pus discharge was noticed on incision and drainage by neurosurgeons and was kept under antibiotic coverage for 2 weeks. Pus continued to drain from the incision site intermittently for 2 months, in the meantime patient noticed swelling over the right cheek with redness of the right eye. By the time, the patient reported to us, he had developed a sinus with pus discharge from a wound measuring 1 cm × 0.5 cm at the lateral one-third of infraorbital rim with exposed underlying bone [Figure 2] while the lesion over parietal region of scalp was regressed by then. On palpation, pus was seen oozing from the floor of the right orbit. The lesion was tender to palpation, and no lymphadenopathy was noted. Patient had no history of fever with chills or weight loss.

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A presumptive diagnosis of osteomyelitis was made with differential diagnosis as hematogenous osteomyelitis, tuberculous osteomyelitis, and eosinophilic granuloma.

The pus was sent for culture and sensitivity and showed growth of coagulase-negative *Staphylococcus* sensitive to ciprofloxacin, cefoxitin, and clindamycin. Routine blood investigations were within normal limit. Radiographically, occipitomeatal view revealed an ill-defined osteolytic lesion in the right zygomatic bone. CT scan revealed lytic lesions in relation to the right zygomatic bone with evidence of sclerosis [Figure 3]. Partial sequestration with curettage of zygomatic bone without involvement of lateral canthal ligament was carried out under general anesthetic (GA) [Figure 4] and patient was kept under antibiotic coverage of clindamycin and ornidazole for 2 weeks. No secondary surgical intervention was required. Follow-up after 1 year was uneventful [Figure 5].

DISCUSSION

Osteomyelitis is defined as inflammation of bone marrow that surrounds cortical bone. Typically, osteomyelitis is classified as chronic or acute, depending on the length of time during which the infection or the symptoms were present. The traditional classification system of Waldvogel *et al.* is derived from hematogenous or contiguous focus in origin. In addition, osteomyelitis can also be classified as endogenous (hematogenous in origin) or exogenous (by trauma). Osteomyelitis in adults is most often subacute or chronic and usually ensues from a traumatic insult to the involved area.^[1]

Exogenous osteomyelitis is more common (47%) than hematogenous osteomyelitis (19%) or osteomyelitis secondary to vascular insufficiency (34%). In posttraumatic osteomyelitis, microorganisms can be introduced directly into the bone or via contiguous spread from injury to overlying soft tissue.^[1] In hematogenous osteomyelitis infection may result from hematological

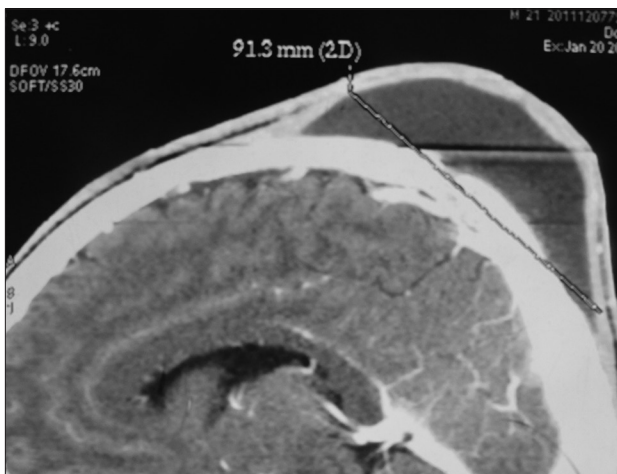


Figure 1: Subgaleal abscess with depressed fracture of parietal bone



Figure 2: Exposed bone and pus discharge from lateral one-third of infraorbital rim

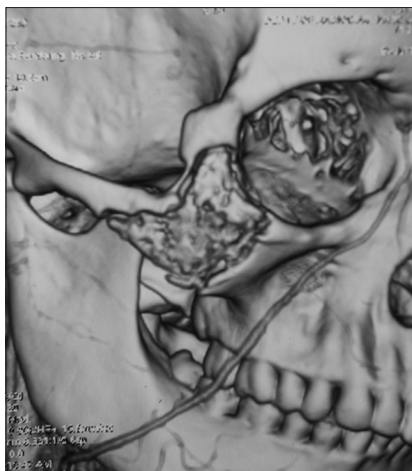


Figure 3: Three-dimensional computed tomography scan window showing lytic lesion of zygomatic bone



Figure 4: Partial sequestration with curettage of zygoma

bacterial seeding from a remote source. It is a type of osteomyelitis more commonly associated with children where it tends to occur in the rapidly growing and highly vascular metaphysis of growing bones. Hematogenous osteomyelitis is also seen in patients with distant foci of infection.^[2] The site of infection varies with the age. In children, the most common sites of involvement are the long bones. In adults, it most commonly involves the vertebral bones, the next common sites are the flat bones of the axial skeleton such as the clavicle and pelvis.^[2]

However, as stated in the literature, osteomyelitis of midface itself is a rare entity. This made us to investigate further in the case. As the swelling and pus discharge over zygomatic bone was seen after 3 months of depressed fracture of parietal bone, relation between both episodes was evident.

Patient presented with fluctuant swelling over parietal region of scalp following trauma. Contrast-enhanced CT-head showed evidence of hypodense collection in subgaleal layer of the scalp in parieto-occipital region measuring 9 cm × 3 cm, diagnosed as parietal bone fracture with subgaleal abscess [Figure 1]. Following trauma, there was the formation of subgaleal hematoma which eventually got infected and formed abscess. The foci of infection in contiguity to parietal bone led to posttraumatic (exogenous) osteomyelitis.

Detailed study of anatomic relationship of involved sites and their vascularity was carried out. Part of parietal bone is supplied by superficial temporal vessels. Superficial temporal vein begins at the vertex of skull in a plexus which communicates with the frontal and supraorbital veins, with corresponding vein on the opposite side, and with the posterior auricular vein and occipital vein. From this network, frontal and parietal branches arise, unites above zygomatic arch to form a trunk of vein, which is

joined in this situation by the middle temporal vein, from the substance of temporalis. It crosses the posterior root of the zygomatic arch, enters the substance of the parotid gland, and unites with the internal maxillary vein to form posterior facial vein^[3] [Figure 6].

Thus, it is evident that there was seeding of the microorganisms from the distant foci, i.e., from the parietal bone to the zygomatic bone that resulted in osteomyelitis of zygomatic bone which was of hematogenous origin.

Patient was planned for surgery under GA. Right infraorbital incision was given with lateral extension. Sequestrum removal was done with thorough curettage of zygomatic bone. Copious irrigation was done using normal saline and betadine followed by closure. Postoperative healing was uneventful.

CONCLUSION

In the majority of cases, posttraumatic osteomyelitis is a clinical diagnosis, definitively confirmed by microorganisms isolated from the biopsy specimen and histopathological examination. Hematogenous osteomyelitis occurs mainly through bacteremia which has distant foci of infection. A high index of suspicion and a thorough approach to the evaluation of patient are therefore essential to establish a diagnosis. Surgical curettage and antibiotic therapy can be successfully instilled as a treatment modality.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal.



Figure 5: Follow-up after 1 year

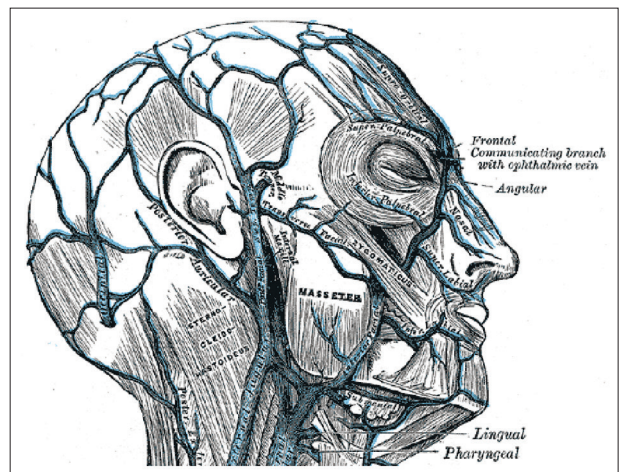


Figure 6: Vascularity of scalp and face

The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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