

<http://www.pjbs.org>

PJBS

ISSN 1028-8880

**Pakistan
Journal of Biological Sciences**

ANSI*net*

Asian Network for Scientific Information
308 Lasani Town, Sargodha Road, Faisalabad - Pakistan

Ulcerative Gingival Granuloma: A Condition for Bone Biopsy

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Abstract: Osteomyelitis as a medical term defining a specific type of infection may be classified in acute and chronic form. In our case an acute mandibular osteomyelitis is reported with evaluation of the clinical and histological examination. The biological course of the disease determined on that basis. The significance of this report focused on the early diagnosis and the possible need for bone biopsy.

Key words: Osteomyelitis, bone biopsy, gingival granuloma micro organisms

INTRODUCTION

Bone infection of the cranial complex is always an alarm status for the clinicians. This infection may be characterized as acute or chronic. This osseous disease may be caused from a contiguous focus of infection or via vascular network (Sia and Berbari, 2006). Early diagnosis is considered to be valuable if we account the consequence of the chronic or late-onset osteomyelitis which may cause an excessive bone loss due to the pathological process itself and the excessive surgical debridement (Springer *et al.*, 2007). Non-vital teeth are usually associated with micro-organisms that invade pulp cavity, root canal and periodontium through the root apex or lateral root canals. The extra-root proliferation of micro organisms stimulated the host defense mechanism and may be found to irritate the surrounding tissues



Fig. 1: Radiological sign of pathological mixed radiolucent and radiopaque lesion in the posterior left mandible

(Lin *et al.*, 1996). When the defense mechanism could not overcome this milestone the affected mandible progressed gradually from the acute to chronic stage. A case of acute infection of bone structure or osteomyelitis with radiographic signs (Fig. 1) is described with great interest to the treatment approach.

CASE REPORT

A male patient, 62 years old, presented with painful ulceration loci of the mandibular mucosa, lingual to the non-vital left lower second molar, of one-month duration (Fig. 2). A biopsy of the soft tissue was performed. The paraffin tissue block cut in microtome in 5 µm and the tissue dyed with haematoxylin-eosin and Gram stain. The examination of the soft tissue specimen revealed gingival granuloma (Fig. 3). A second bone biopsy divulged the presence of drop-like invasion of the cortical plate with



Fig. 2: Evident loci of ulceration on the lingual aspect of the posterior mandibular mucosa

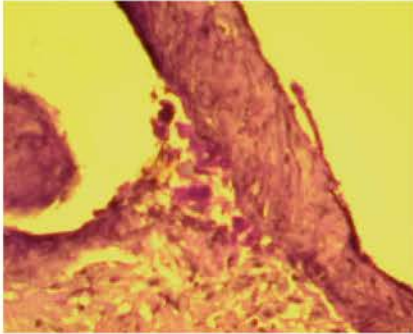


Fig. 3: Microscopic appearance of granuloma invaded by micro-organisms (PAS X 400)

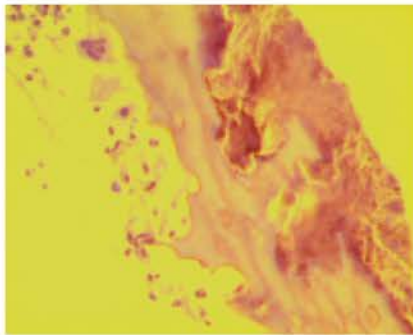


Fig. 4: Microscopic appearance of the bone which was massively infiltrated by polymorphonuclear neutrophils on the inferior aspect. The cloud of microbes was observed on the superior aspect of the specimen. (H and E X 400)



Fig. 5: The bone chip extracted from the lingual mandibular plate sent to histopathology department

undoubted acute inflammation of the bone structure, indicating osteomyelitis (Fig. 4 and 5).

Important feature was the non vital bone with drop-like edges and absence of stainable osteocytes and

osteoblasts. The presence of polymorphonuclear neutrophils (PMN's) in the surrounding tissue was compatible with the acute course of infection defining the biological process of the abnormality.

The microbiological culture of surrounding soft tissues by swab cultivation showed many aerobic microbes without the presence of fungi or actinomyces. Therefore, the diagnosis of acute bacterial mandibular osteomyelitis confirmed.

The invasion of the cortical plate in coexistence with acute osteomyelitis was considered critical feature requiring surgical debridement in addition to antimicrobial medicine, to prevent the problematic nature of chronic ill health. The surgical debridement performed under infiltrated local anaesthesia (2% xylocaine with 1:80000 adrenaline). The debridement carried out through the necrotic soft tissue orifice without blade incision. The use of small bone excavators found useful for removal of the necrotic bone. The patient covered empirically with antibiotic for two weeks (amoxicillin 500 mg + clavulanic acid 125 mg, tds, per os). The involved tooth treated endodontically in two sessions. The technique of the endodontic treatment is not described because is out of the scope of this study.

DISCUSSION

Inflammation of the bone and bone marrow is a serious condition requiring immediate attention. Osteomyelitis, a medical term describing this situation may be distinguished into acute and chronic patterns according to the histopathological findings. In acute osteomyelitis, infiltrated polymorphonuclear neutrophils found in the tissue like other acute infections (Wang *et al.*, 1996). The spread of infection may affect the periosteal area inducing detachment or rupture of the periosteum and intense pain (Dargouth *et al.*, 1989). This detachment or rupture will compromise the vascular network having as a consequence the insufficient blood supply of the relevant bone area (Smartt *et al.*, 2005). This inadequacy may induce inflammation due to primary bacterial invasion and ischemia or necrosis as a secondary event. Therefore, osteomyelitis should be diagnosed in early stages to avoid excessive collapse of the normal biological bone response. At the stage of necrosis the local tissue repair mechanism is unable to overcome this sequence. When the osteomyelitis becomes chronic, the unhealthy picture of histopathology changed to massive infiltration from chronic inflammatory cells (Itokazu *et al.*, 1998).

Osteomyelitis may be diagnosed in the oral region involving the associated bone structures. The mandible

due to low blood supply in comparison to the spongy maxilla may be hypothetically more affected. Therefore impaired healing of gingival lesions with macroscopically seen underlined bony tissue should be initially treated with soft and hard tissue biopsy. When the diagnosis of jaw bacterial osteomyelitis confirmed the patient may be treated with broad spectrum antibiotics for 10 to 20 days according to the severity. According to a recent study, acute osteomyelitis was sensitive to antibiotic treatment (Prasad *et al.*, 2007). Thorough surgical debridement of necrotic tissue such as sequestrum or involucrum must be performed allowing the healing process to be uncomplicated.

Biologically, the bacterial production of toxins took place in the unwilling process of necrosis. The most common micro organisms involved were pyogenic bacteria (Dirschl and Almekinders, 1993). Furthermore the bone biopsy was more sensitive than blood culture for identifying microbes (Karwowska *et al.*, 1998).

Another key point for the patients well being is the regular follow up. We assume that the patient should be followed up at regular three-month intervals for a year. This would establish the correct clinician's action and any reoccurrence could be approached immediately at early stages. Concluding, immediate response may be found satisfactory in avoiding amputation of the mandible; a clinical approach of bio-psychosocial importance.

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