



POST HERPETIC OSTEONECROSIS OF THE MAXILLA

ABSTRACT

Herpes Zoster (HZ) is caused by the secondary reactivation of Varicella Zoster virus. It is characterised by presence of severe pain and unilateral vesicles along the distribution of the affected nerve. Osteonecrosis is one of the rare complications of Herpes Zoster which is seen after the acute phase of the illness has subsided. We report a case of osteonecrosis of the maxilla in 35-years-old female. The subject gave a history of Herpes Zoster of the maxillary branch of the trigeminal nerve. After healing of the lesions, she then developed osteonecrosis of the maxilla. Further investigations revealed her HIV positive status. The clinical features, pathogenesis and management of this rare condition are described. Further, the occurrence of HZ induced osteonecrosis lead to the diagnosis of HIV in the present case.

Keywords: Herpes zoster, osteonecrosis, HIV.

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Received : 14.12.2018

Accepted : 01.03.2019

INTRODUCTION

Osteonecrosis, also known as ischemic necrosis, avascular necrosis, aseptic necrosis and osteochondritis dessicans, is characterised by in situ death of bone.¹ Herpes Zoster is a caused by the reactivation of Varicella Zoster virus in sensory ganglia. It leads to painful vesicles of the skin and oral mucosa along the distribution of the affected nerve.² Complications are seen commonly in immune suppressed individuals and include post herpetic neuralgia, Herpes Zoster ophthalmicus, meningitis, VII th nerve palsy, myelitis and encephalitis.² Osteonecrosis of bone after herpes zoster infection is a rare complication, often associated with tooth exfoliation and needs rapid identification and management.³

In this report, we present the case of an HIV positive patient with osteonecrosis of the maxilla secondary to Herpes Zoster of the maxillary division of the trigeminal nerve.

CASE REPORT

A 35 years-old- female patient reported to the Department of Oral Medicine and Radiology with a complaint of pain in the upper right back tooth region for 3 months. She gave history of multiple fluid filled vesicles localized to the right middle third of the face 9 months ago which was associated with severe pain and burning sensation. The lesions resolved on their own within 2 weeks with scarring. From the past three months she had developed pain in the right maxillary posterior region with loosening and exfoliation of the teeth and pus discharge. Extraoral examination showed scarring over the right middle third of the face. The skin over the area was erythematous with mild rise in temperature. Depigmentation was noted on the right side of the upper lip. (Figure 1A)



Figure 1A: Extraoral photograph showing unilateral scarring over the right middle third of the face and areas of depigmentation.

Figure 1B: Intraoral photograph showing ulceration extending from maxillary right lateral incisor to maxillary right second premolar region and presence of necrotic bone.

Figure 1C: Occlusal radiograph showing unilateral bone loss and missing teeth.

Figure 1D: Panoramic radiograph showing ill-defined bone loss extending from maxillary right central incisor to maxillary right first premolar with loss of the associated teeth.

Intraoral examination revealed an ulcerated area extending from maxillary right lateral incisor to maxillary right second premolar region. Necrotic bone could be seen at the base of the ulcer and pus discharge was present. Teeth from maxillary right central incisor to maxillary right first premolar were missing and maxillary right second premolar and first, second and third molar teeth were mobile. (Figure 1B) Palatal gingiva was edematous and tender on palpation. There were no decayed teeth. Pus Culture was negative.

Occlusal (Figure 1C) and Panoramic radiographs (Figure 1D) showed ill-defined bone loss extending from maxillary right central incisor to maxillary right first premolar with loss of the associated teeth. Serological investigation showed that she was HIV positive. Due to financial constraints, she was unwilling for any further investigations. A final diagnosis of osteonecrosis of the maxilla secondary to herpes zoster was given. Saucerization and decortication was done along with antibiotic coverage of amoxicillin and metronidazole for 5 days. Histopathology with hematoxylin and eosin stain (H&E, 10X magnification) showed granulation tissue with evidence of numerous chronic inflammatory cells. Bone fragments (H&E, 40X) showed empty bone lacunae without any evidence of osteocytes suggestive of necrotic bone. (Figure 2 A and B)

Healing was uneventful and the patient was subsequently lost to follow up.

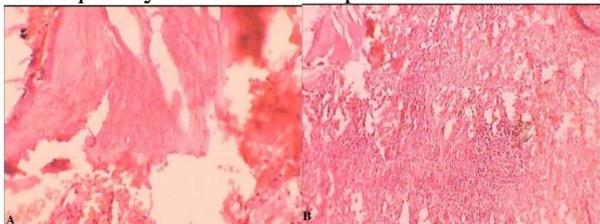


Figure 2: A: Photomicrograph H&E (40X) showing necrotic bone and B: Photomicrograph H&E (10X) showing granulation tissue.

DISCUSSION

Herpes Zoster is a reactivation of latent Varicella Zoster virus.³ The commonly affected dermatomes include the thoracic (45%), cervical (23%) and trigeminal (15%).³ Advanced age, physical trauma, stress, malignancy, radiation therapy and well as immunocompromised individuals such as transplant patients, patients on steroid therapy and HIV positive patients have increased risk of developing Herpes Zoster.⁴ Herpes Zoster occurs around 15 times higher in HIV positive patients on comparison with patients who are HIV negative and is often the first manifestation of AIDS. In 20% cases, Herpes Zoster affects the trigeminal nerve.⁵

It was Gonnet in 1922 who first described alveolar bone necrosis and tooth loss as a consequence of Herpes Zoster infection.^{2,6} Herpes Zoster is considered as an early manifestation of HIV infection. The first report of post herpetic osteonecrosis in a patient with AIDS related complex was by Srisuwan in 1999.²

Herpes Zoster is a common infection in HIV-infected patients with incidence up to five cases per 100 persons per year.⁷ The incidence of HZ of the trigeminal nerve is more common in an older age group, however, the affected HIV positive patients are generally younger.³ Siwamogstham *et al.*² mention that in India, Herpes Zoster was found to be an early manifestation in HIV infected patients and was seen in the age group of 12–45 years. The clinical presentation of HZ includes unilateral severe pain and burning sensation and vesicle formation along the area of distribution of the affected nerve.³ Diagnosis of HZ is primarily based on the clinical presentation. Laboratory diagnosis is required in unusual presentations as is seen in immunocompromised patients and includes Tzank smear, viral culture, direct

immunofluorescence, serum immunoglobulin levels and polymerase chain reaction.⁴

Various hypotheses have been proposed to explain HZ induced osteonecrosis of bone. These include local vasculitis, infection of terminal nerves, denervation of bone and osteoblast injury.² Mintz and Anavi⁸ suggested that pre-existing pulp or periodontal inflammation may exacerbate tooth exfoliation and bone necrosis. Mahajan *et al.*⁹, however, reported three cases of osteonecrosis which had no immunodeficiency, no tobacco habits, and minimal periodontal disease, suggesting that Herpes Zoster may be the primary cause of osteonecrosis.

Osteonecrosis after Herpes Zoster commonly occurs once the acute phase has subsided.⁶ The time period from the onset of HZ and osteonecrosis varies from immediate appearance to 42 days with a mean of 21.2 days. Among the 45 cases of HZ reviewed by Cloarec *et al.*⁷, osteonecrosis developed in 14 cases with a mean interval of 5 weeks. Other authors suggest as much as 3-24 weeks.¹⁰ In our case, the patient reported HZ infection 9 months earlier though the symptoms of osteonecrosis started 6 months after HZ infection. Osteonecrosis of the hip has been associated with HAART therapy in HIV positive patients but the data is not conclusive.¹

Kim *et al.*¹⁰ state that a patient with history of Herpes Zoster of the trigeminal nerve, vesicles restricted to a unilateral jaw quadrant and clinical features of osteonecrosis after a proper interval, can be diagnosed as having osteonecrosis caused by herpes zoster. It is difficult to differentiate Osteonecrosis of the jaw from osteomyelitis. Magnetic resonance imaging has been used in diagnosis, however, there no studies which have described the radiographic differences between osteomyelitis and osteonecrosis. The major difference appears to be that osteomyelitis of the jaw bone occurs as an extension of odontogenic infection.¹¹ Histological findings in osteonecrosis are similar to those in osteomyelitis. Necrotic bone and inflammatory cell infiltration is seen as in our case.¹⁰

Use of antiviral agents is known to reduce the severity and duration of pain in Herpes Zoster. However antiviral therapy must be given within

the first 72 hours after the appearance of the lesions.⁵ Prevention of complications is by immediate use of antiviral agents and painkillers.¹⁰ In the present case, the patient did not receive any medication for HZ.

Once osteonecrosis occurs, antibiotics can relieve the pain temporarily but stoppage of the medication causes pain recurrence.⁵ The diseased marrow must, therefore, be surgically removed.⁵ Thus, antibiotic administration, sequestrectomy and extraction of involved teeth leads to healing which was the management used in the present case.^{2,5} Early treatment recommendations for osteonecrosis discouraged use of surgical therapy. However, recent reports recommend resection of the affected bone till the appearance of healthy, bleeding bone. Other treatment recommendations include use of laser therapy, platelet rich plasma, platelet derived growth factor and hyperbaric oxygen.¹²

In the present case, diagnosis of osteonecrosis secondary to HZ was made based primarily on the history and clinical features. Advanced investigations could not be done due to financial constraints and this represents the main limitation of this report.

To conclude, osteonecrosis secondary to Herpes Zoster is a rare complication. However, due to increasing numbers of HIV positive patients in the population who are susceptible to various infections, it is important to identify such cases promptly and institute effective treatment without any delay. The present report highlights the features of Herpes Zoster associated osteonecrosis of the jaws. Further, the occurrence of HZ induced osteonecrosis lead to the diagnosis of HIV in the present case.

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