Case report

Herpes zoster along Maxillary Nerve with Osteonecrosis

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Abstract

Herpes zoster (HZ) presents as a cutaneous vesicular eruption in the area innervated by the affected sensory nerve, usually associated with severe pain. Oral manifestations of HZ appear when the mandibular or maxillary divisions of the trigeminal nerve are affected. A case, of zoster involving the maxillary nerve with osete necrosis of the maxilla is described.

Keywords: Maxilla, Osteonecrosis, Tooth exfoliation, Varicella zoster

Introduction:

Zoster is a common, predominantly dermal, and neurologic disorder caused by the varicella-zoster virus (VZV), a virus morphologically and antigenically identical to the virus causing varicella (chickenpox). Difference in clinical manifestations between varicella and zoster apparently depends on the immune status of individual patients; those with no prior immunologic exposure to varicella virus, most commonly children, develop the clinical syndrome of varicella, while those with circulating varicella antibodies develop a localized zoster.\textsuperscript{1}

Zoster probably results most often from a failure of the immune system to contain latent varicella-zoster virus replication. Whether other factors such as radiation, physical trauma, certain medications, other infections, or stress also can trigger zoster has not been determined with certainty. Nor is it entirely clear why circulating varicella antibodies and cell-mediated immune mechanisms do not prevent recurrent overt disease, as is
common with most other viral illnesses.\textsuperscript{1}

**Pathophysiology**

Zoster most commonly manifests in 1 or more posterior spinal ganglia or cranial sensory ganglia, presumably because viral particles have been preserved within these ganglia in a dormant state since the original episode of varicella. This results in pain and characteristic cutaneous findings along the corresponding sensory dermatomes of the involved ganglia. Less often, involvement of anterior and posterior horn cells, leptomeninges, and peripheral nerves is observed, with consequent muscle weakness or palsy, pleocytosis of spinal fluid, and/or sensory loss. Rarely, myelitis, meningitis, encephalitis, or visceral involvement may occur.\textsuperscript{1,2,3,4}

**Case report:**

A 58-year-old male presented to the Oral medicine Department with complaints of pain and exfoliation of the upper right front teeth since two days. On examination extra orally scarring and pigmentation was seen on right cheek region one centimetre below the lower eye lid spreading inferiorly towards the ala of the right nose and commissure of the right lip, superolaterally a scar was also seen on right temple region (fig-1a &1b).

![Fig -1a](image1) ![Fig-1b](image2)

On intra oral examination open tooth socket with respect to 13 tooth region (fig -2) and exposed alveolar bone with respect to 14,15,16 region along with receded palatal gingival margin with respect to 14,15,16 (fig -3) was seen.

![Fig -2](image3) ![Fig -3](image4)

On enquiry patient gave history of severe pain along with vesicular eruptions over the right cheek for 12 days. Eruptions were
noted in successive crops over the right cheek, side of the nose, upper lip and temple. Eruptions were heralded by mild fever, malaise, and piercing pain over the right cheek for initial two days. The vesicles were followed by pain in the right upper teeth with difficulty in chewing, on consultation with a dermatologist the pain and vesicular eruptions reduced gradually and later he was referred to the dentist with a clinical diagnosis of herpes zoster along the neural distribution of the right maxillary nerve.

The patient was treated with oral acyclovir 800 mg. five times a day for seven days, supplemented by injection B1-B6-B12, non-steroidal anti-inflammatory analgesics along with local application of ciprofloxacin ointment 0.3% over the vesicles.

On radiographic examination panoramic image showed missing 12, 13 and severe alveolar bone destruction in the 12, 13 region (fig -4).

Discussion:
Zoster may begin with a systemic response, eg, fever, anorexia, and lassitude, although symptoms frequently are mild and may not be associated by either patient or physician with the classic zoster signs and symptoms that follow. Symptoms typically include prodromal sensory phenomena along 1 or more skin dermatomes lasting 1-10 days (averaging 48 h), which usually are noted as pain or, rarely, paresthesias. Prodromal pain typically is described as muscle or toothache like in origin.
but may simulate headache, iritis, pleurisy, brachial neuritis, cardiac pain, appendicitis or other intraabdominal disease, or sciatica, which can result in incorrect tentative diagnoses. The prodromal interval of pain prior to onset of cutaneous findings has been believed to represent spread of viral particles along sensory nerves; however, approximately 10% of patients report onset of pain and rash simultaneously. After the onset of prodromal symptoms, the following signs and symptoms occur: Patchy erythema, occasionally accompanied by indurations, appears in the dermatome area of involvement. Regional lymphadenopathy may appear at this stage or subsequently. The classic finding of grouped herpetiform vesicles develops upon the erythematous base. At this point, the virus usually has induced significant inflammation of the involved sensory nerve causing severe pain, stopping abruptly at the midline of the limit of sensory coverage of the involved dermatome.\textsuperscript{1, 2}

Unfortunately, resolution of the associated pain does not always accompany resolution of erythema and vesiculation. PHN, which usually is confined to the area of original dermatomal involvement, can persist for weeks, months, or years and often is severe. The reason some patients with zoster, and not others, experience PHN is not understood fully, but patients who are older (>60 y), particularly patients who are debilitated or arteriosclerotic, are affected far more frequently than patients who are younger.\textsuperscript{1, 2}

In addition, PHN is observed more frequently after cases of herpes zoster ophthalmicus and in instances of upper body dermatomal involvement. Other less common postherpetic sequelae include hyperesthesia, or more rarely, hypesthesia or anesthesia in the area of involvement.\textsuperscript{1, 2} Zoster of the maxillary branch of the fifth CN (CN V2): Involvement is localized to the ipsilateral cheek, lower eyelid, side of the nose, upper eyelid, upper teeth, and mucous membrane of the nose,
nasopharynx, tonsils, and roof of the mouth. In our case similar findings were found along with severe osteonecrosis of the alveolar bone along with exfoliation.

At times, only the oral mucus membrane is involved without skin manifestations. Early pre-eruptive herpetic pain can simulate a severe toothache and result in unnecessary oral surgery or dental treatment. It is very unusual for zoster to involve maxillary or mandibular nerve without ophthalmic division involvement which was seen in our case.

A case of 76-year-old man presenting with necrosis of a segment of mandibular alveolar bone and spontaneous exfoliation of the corresponding teeth 1 month after acute varicella zoster infection of the mandibular branch of the trigeminal nerve was reported in Japan, which was similar to our case except the involvement of maxilla and exfoliation of the teeth. Two weeks later, teeth number 43 (lower right canine) and 44 (lower right first premolar) had class III mobility, flow of purulent exudate from the gingival sulcus, and deep pockets (>11 mm). The radiological examination showed advanced alveolar bone loss around both teeth. The prognosis for teeth number 27 and 28 was considered hopeless, and they were extracted, which was similar to our case except the involvement of maxilla and exfoliation of the teeth.

In a south African study extensive osteonecrosis and exfoliation of teeth in the area innervated by the nerve affected by HZ was more common in HIV sero positives, but in our case
exfoliation of teeth was seen in HIV sero negative..

**Conclusion:**

Extensive osteonecrosis and exfoliation of teeth in the area innervated by the nerve affected by HZ has been reported after HZ infection. Clinicians should be aware of this possible outcome after a trigeminal HZ infection.

**References:**

8. Alveolar bone necrosis and spontaneous tooth exfoliation in an HIV-seropositive subject with herpes zoster. SADJ. 2008 Mar;63(2):106-10