Mandibular Osteomyelitis Following Trigeminal Herpes Zoster Infection

Herpes Zoster Sonrası Gelişen Mandibular Osteomyelit Enfeksiyonu

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**OLGU RAPORU (Case Report)**

**ABSTRACT**

Varicella-Zoster is a disease which causes varicella (chickenpox) and herpes zoster (HZ). The prodromal syndromes of HZ are burning, tingling, itching occuring in the skin over the nerve distribution. Oral vesicles usually appear after the skin manifestations. The most common complication of HZ involving the trigeminal nerve is a prolonged postherpetic neuralgia. Rarely reported complications following oral involvement with herpes zoster are devitalized teeth, internal resorption and spontaneous exfoliation of the teeth with osteomyelitis of the alveolar bone. This is a case report of a patient with HZ infection of trigeminal nerve involvement that resulted in mandibular alveolar bone necrosis. Careful dental and radiological examination is necessary to prevent unnecessary and delayed treatment for the patient.

**ÖZET**


**KEYWORDS**

Herpes zoster, osteomyelitis, postherpetic neuralgia

**ANAHTAR KELİMELER**

Herpes zoster, osteomyelit, postherpetic nevralji
INTRODUCTION

Varicella-Zoster is a disease which causes varicella (chickenpox) and herpes zoster (HZ). HZ occurs after reactivation of latent Varicella-zoster virus (VZV) in sensory ganglia, which lies dormant in the dorsal root ganglia of the spinal cord or the extramedullary cranial nerve ganglia of patients with diminished immunity to the virus.

The virus spreads along the nerves of the associated dermatome causing vesicular eruptions. HZ of the trigeminal nerve is associated with painful vesicles of the skin and oral mucosa of the affected branch of the nerve. Usually, oral vesicles appear after skin manifestations. Oral vesicles rupture and coalesce presenting as large mucosal erosions. Prodromal pain may occur in the distribution of the trigeminal nerve some days before vesicular eruptions and this pain may mimic toothache or pulpitis.

Patient with HZ infections usually progress through three stages: (a) prodromal stage (b) active stage (also called acute stage) and (c) chronic stage.

The prodromal syndrome stage presents itself as sensation described as burning, tingling, itching, boring, prickly or knife-like occurring in the skin over the nerve distribution. This usually precedes the rash of the active stage by a few hours to several days. Infections occur unilaterally almost exclusively in middle aged and elderly patients. This infection characterized by the appearance of vesicles that occur on the skin along the pathway of an involved sensory nerve usually are associated with severe pain. When branches of the trigeminal nerve are involved, lesions may appear on the face, in the mouth, in the eye, or on the tongue. Prodromal pain that occurs in the distribution of the trigeminal nerve several days before vesicular eruptions may simulate pulpitis. Three or four days later, papules develop, which rapidly become vesicles. Oral vesicles usually appear after the skin manifestations. The most common complication of HZ involving the trigeminal nerve is a prolonged postherpetic neuralgia. Rarely reported complications following oral involvement with herpes zoster are devitalized teeth, internal resorption and spontaneous exfoliation of the teeth with osteomyelitis of the alveolar bone.

Gonnet was the first in 1922 to describe alveolar bone necrosis and tooth loss in association with Herpes Zoster (HZ) infection. Osteonecrosis following HZ infection often presents as painless exfoliation of teeth in the involved area. This occurs after the acute phase of the infection has subsided. The pathogenesis of the osteonecrosis is unclear although an alteration of the vascular supply to the affected bone has been postulated.

Few reports on HZ infection and oral complications including osteonecrosis and tooth exfoliation have been published. This is a case report of a patient with HZ infection of trigeminal nerve involvement that resulted in mandibular alveolar bone necrosis.

The objectives of this paper are (i) to present a brief review of Herpes zoster (ii) to highlight the role of the dentist in diagnosis and management of HZ of the trigeminal nerve.

CASE REPORT

A 76-year old man previously diagnosed with Herpes zoster, was admitted to the Dental Clinic of Ege University. The clinical examination revealed generalized hyperesthesia over the vesico-bullous lesions on the left trigeminal nerve. The alveolar process became exposed in the premolar area of left mandibulary bone. The panoramic and periapical radiograph showed mandibular alveolar bone necrosis.

The patient was placed on antibiotic therapy (Penicillin G) for 21 days. Following a week after the antibiotic therapy, the sequestrum was removed and the left second incisor teeth was extracted. The histological diagnosis following the biopsy was reported as osteomyelitis.
Follow-up controls and radiographs were taken 2 weeks later, showing complete resolution of the lesions (Figure 6,7). However, the patient still has persistent pain resembling postherpetic neuralgia.

DISCUSSION

Trigeminal nerve involvement in HZ is usually unilateral and limited to a single division, more often the ophtalmic division. Oral manifestations appear when the second (maxillary) or third (mandibular) trigeminal divisions are affected. Frequently the intraoral lesions are associated with cutaneous lesions affecting the corresponding area innervated by the affected sensory nerve as present in our case.
The most debilitating complication of HZ is pain associated with acute neuritis and post-herpetic neuralgia\(^7\). In our case the patient’s main complaint was the post-herpetic neuralgia. On rare occasions, involvement of bone following trigeminal HZ has been reported. Review of literature demonstrate that the common feature for all the cases is the unilateral involvement of bony structures confined to regions innervated by the affected nerve\(^7\).

Spontaneous exfoliation of teeth in the area innervated by the affected nerve has been reported. Some authors believe that this is an early event occurring during the first 2 weeks of the infection while others consider this as a late complication that will occur between the third to twelfth week after the onset\(^1,3,4\). Loss of teeth is due to alveolar bone necrosis and to necrosis of the periodontal ligament. After tooth extraction, healing of the periodontal tissues is usually slower than normal, and frequently fragments of necrotic bone remaining after the extraction need to be removed to preserve the height of the alveolar process\(^3,4,7\).

The HZ infection can occasionally cause osteonecrosis, either by affecting the innervation of the periosteum or by a direct vasculotropic effect of the virus, both of which lead to alteration of the blood flow to the affected area. The role of vascular alteration in the development of osteonecrosis is further supported by the fact that osteonecrosis usually occurs in patients with compromised vascularity because of aging, irradiation, or chronic inflammation\(^3,7,8\). One of the earliest signs of osteonecrosis of the jaw bones associated with HZ infection is spontaneous exfoliation of teeth prior to overt signs of osteonecrosis\(^10\). Further, it seems reasonable to assume that preexisting pulpal or periodontal inflammatory conditions have the potential to contribute to a greater probability of tooth exfoliation and bone necrosis\(^3\). This infection characterized by the appearance of vesicles that occur on the skin and mucous membrane along the pathway of an involved sensory nerve is usually associated with severe pain. Rarely reported complications following oral involvement with herpes zoster are devitalized teeth, internal resorption and spontaneous exfoliation of the teeth with osteomyelitis of the alveolar bone\(^1,5,8,9\). Routinely patients with HZ are seen by their physicians for treatment. However, the dentist is often involved in the initial diagnosis of this disease and therefore must be familiar with its differential diagnosis. The diagnosis of HZ is clear when the prodromal symptoms are present and the dermatomal vesicular rash is present. Careful history and dental examination usually rule out other pathology.
CONCLUSION

This is a case report of a patient with HZ infection of trigeminal nerve involvement that resulted in mandibular alveolar bone necrosis\(^4,5,7,9,12\). Herpes zoster of the trigeminal nerve is a disease that falls within the diagnostic purview of all dentists and dental specialists. Thorough knowledge of this disease will prevent unnecessary and delayed treatment for the patient.\(^\text{10-13}\)

REFERENCES


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