Herpes Zoster involving Trigeminal Nerve

Rohit B Gadda[1], Rohini Salvi[2], Neha Patil[3]

Abstract

Herpes zoster is a common acute viral infection caused by reactivation of Varicella-Zoster virus. Acute pain of herpes zoster lowers the quality of life and interferes with day to day activities. We report a case of herpes zoster in a 68 year old, healthy male patient in which the prodromal symptoms started as toothache. This case highlights the importance of a thorough dental history and examination in patients with toothache.

Key Words: Herpes zoster, Trigeminal nerve, toothache.

Introduction

Herpes zoster is an acute neurodermic viral infection of the dorsal root ganglia of the spinal cord or the extramedullary cranial nerve ganglia.[1] It is caused by reactivation of varicella zoster virus (VZV) which lies dormant in the sensory ganglia after an earlier episode of chickenpox and involves the dermatome supplied by the sensory nerve that arises from the ganglion.[2]

Herpes zoster (HZ) is predominantly a disease of the middle-aged and elderly. From 5 to 10 cases per 1,000 persons are seen between the sixth and eighth decades of life.[3] The thoracolumbar trunk (especially T3 to L3) is most commonly affected. HZ may affect cranial nerves, and the trigeminal nerve is then the most frequently affected (18.5%-22% of total cases). Trigeminal nerve involvement is usually unilateral and limited to a single division, more often the first (ophthalmic). Oral manifestations appear when the second or third division is affected.

Prodromal pain may occur along the distribution of the trigeminal nerve few days before the vesicular eruptions and this pain may mimic toothache or pulpitis[4]. HZ of the trigeminal nerve is associated with painful vesicles of the skin and oral mucosa of the affected branch of the nerve. Characteristically, the condition presents as a painful unilateral vesicular rash, usually restricted to the distribution of a sensory nerve.

HZ affecting the oral and maxillofacial region may pose a significant diagnostic challenge and should be considered in the differential diagnosis of those presenting with atypical odontalgia[5].

We report a case of HZ affecting the second and third division of trigeminal nerve.

Figure 1 A, B: Frontal & Lateral view of face demonstrating facial swelling with erythema and vesicular lesions over the distribution of the right maxillary and ophthalmic branches of the trigeminal nerve.

Case Report

68 years old male patient reported with the chief complaint of pain, ulceration and burning on right side of mouth & vesicles on right side of face since 8 days.

Patient was apparently all right 10 days back. The vesicular eruption on the right side of face was preceded by history of toothache and pain in the same region for which he had been prescribed medications by a local dentist. He also experienced ulcerations in right side of oral cavity preceded by vesicles. There was history of fever, swelling over face along with pain. Patient gave no history of any topical application or insect bite, no history of recent exposure to chicken pox or any similar eruption elsewhere on the body.

On extra oral examination (Figure 1 A, B), facial asymmetry was noted due to swelling over right side of face extending, supero-inferiorly from infraorbital region to lower border of mandible, antero-posteriorly

1 Lecturer
2 Professor and Head
3 Lecturer

Department of Oral Medicine & Radiology,
MGM Dental College and Hospital, Navi Mumbai

Address for Correspondence :
Dr Rohit B Gadda,
Department of Oral Medicine and Radiology,
MGM Dental College & Hospital, Navi Mumbai
E-mail: rohitgadda@ gmail.com

from ala of nose to pre-auricular region and also involving the right orbit leading to closure of right eyelids. Erythema and vesicular lesions were seen over right infraorbital region, right cheek and right side of nose and upper lip. Right eye was closed due to bulk of the swelling. On palpation, swelling was tender & soft in consistency. Right sub-mandibular lymph nodes were palpable, two in number, tender, firm, mobile, 1x1cm in size approximately.

On intraoral examination, irregular shallow ulcerations were seen spread over the right buccal mucosa extending from the angle of the mouth, involving the lower mucobuccal fold also involving the right side of the hard palate till the midline. (Figure 2) Clinical examination of dentition was done to rule out dental cause of pain. Generalized gingival inflammation and recession was noted. Teeth on right quadrant of upper jaw gave a normal response to vitality testing using electric pulp tester.

Complete blood count was within normal limits. ELISA for HIV was negative. These investigations ruled out immunosupression. Specific diagnostic test of Tzanc smear was not done and on the basis of clinical signs, a final diagnosis of Herpes zoster involving maxillary and ophthalmic division of trigeminal nerve on right side (V1, V2) was given.

Patient was advised following medications - Tab Acycovir 800mg, five times a day for 7 days, Cap Phexin 500mg, three times a day for 5 days, Tab Combiflam twice a day for 5 days, Hexidine mouth wash, T Bact Cream (Mupirocin 2 %) for local application on face, twice a day.

Table 1: Clinical stages of Herpes Zoster:

PHASES	FEATURES
PRODROME	• Intense pain • Sensitive teeth • Otitis media • Initial viral replication ↓ Acute ganglinitis ↓ Neuronal necrosis
ACUTE	• Cluster of vesicles on erythematous base ↓ Pustular ↓ Ulcerate • Along the path of affected nerve & terminate at midline
CHRONIC	• Post herpetic neuralgia

Figure 2: Intra-oral clinical photographs showing unilateral, ulceration and erythema affecting the hard palate.

Ophthalmology consultation was sought for examination of eye lesions and the patient was advised - Ciprofloxacin 0.3% eye ointment 6 times / day, Ecotears 6 times / day, recalled after 2 weeks.

On telephonic conversation with the patient after 2 weeks, he reported to be absolutely all right without any complaints.

Discussion

Zoster occurs during the lifetime of 10% to 20% of individuals, and the prevalence of attacks increases with age. Our case was 68 years old.

The majority of HZ infections involve the thoracic and lumbar dermatomes; however, approximately 18 to 22% of patients present with infections involving any of the three branches of the trigeminal nerve[5]. Trigeminal nerve involvement in HZ is usually unilateral and limited to a single division, more often the ophthalmic division; however, in our case the maxillary and ophthalmic divisions were involved; this is rare (1.7% of cases)[6].

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 cases.

Reactivation of the latent residual virus occurs after a variable latent phase of between 5 and 40 years in 15% of the patients and results from waning specific cellular immunity. The possible precipitating factors include trivial trauma, physical and mental stress, radiotherapy, surgery and old age.[7]

Patients with HZ may progress through three stages: prodromal stage, active stage (also called acute stage) and chronic stage.[8-10] (Table 1)

The prodromal stage presents as sensations (described as burning, tingling, itching, boring, prickly)

occurring in cutaneous distribution of the dermatome and is believed to represent viral degeneration of nerve fibrils. During this period, if branches of the trigeminal nerve are affected, odontalgia and pulpal necrosis may occur. It is proposed that the reactivated virus may travel the length of the nerve, infect the pulp vasculature lead to infarction and necrosis. In our case the patient reported of pain in mouth and toothache before onset of vesicular eruptions. Furthermore, these symptoms may present up to 1 month before the acute mucocutanous lesion, and pose significant diagnostic difficulties.[8-10]

The active stage is characterized by the emergence of the rash which is nearly always accompanied by systemic upset. The characteristic skin rash progresses from erythematous papules and oedema to vesicles and finally to pustules within 1 to 7 days which dry and crust and are exfoliated over 2 to 3 weeks leaving erythematous macular lesions that may scar. Lesion on the tip of the nose is a sign that the nasociliary branch of the fifth cranial nerve is involved suggesting the potential for ocular infection. In these cases, referral to an ophthalmologist is mandatory as seen in our case.

Diagnostic difficulties may be encountered when the vesicular rash does not occur (zoster sine herpete). It is during the active or 'eruptive' phase that HZ is at its most contagious and could pose a significant cross infection risk.[8] Oral lesions occur with trigeminal nerve involvement and may be present on the movable or bound mucosa. The lesions often extend to the midline and frequently are present in conjunction with involvement of the skin overlying the affected quadrant as seen in our case. The Individual lesions present as 1- to 4-mm white opaque vesicles, which rupture to form shallow ulcerations. Involvement of the maxilla may be associated with devitalization of the teeth in the affected area; however our case did not have this finding.

The chronic stage is only seen in approximately 10% of all patients with HZ, and is termed post-herpetic neuralgia. It is described as a brief recurrent shooting or shocking allodynia, with a constant, usually deep pain, lasting beyond the period of healing of the active skin lesions. It may persist for years and is a significant cause of morbidity. However our case did not report of any symptoms after healing of the lesions. Although post-herpetic neuralgia is the most common complication of HZ, other complications include neurological disorders, ophthalmologic, cutaneous and visceral complications. Periapical lesions, root resorption, tooth exfoliation and alveolar osteonecrosis have also been reported in association with HZ infection.[8-10]

Although HZ is a self-limiting condition and resolution is usually complete, treatment is indicated in some cases to reduce the acute symptoms of pain and malaise, to limit the spread and duration of the skin lesions and to prevent complications. The pharmacological approach is based on symptomatic relief and antiviral therapy. For many years, aciclovir (ACV) has been the antiviral drug of choice for the treatment of VZV infections. Recently, other antiviral agents such as valaciclovir and famciclovir have been developed to overcome the low oral bioavailability of ACV and its limited and less predictable effect in preventing the development of post-herpetic neuralgia, as well as to provide a more favorable dosage regime.[8] Antiviral therapy should be initiated as early as possible, especially when patient factors that may complicate the manifestations of the condition are expected.[11]

Conclusion

A case of HZ affecting the trigeminal nerve is reported. This case highlights the importance of a thorough dental history and examination in patients with toothache. In those presenting with atypical ondontalgia, HZ should be considered in the differential diagnosis. The cardinal problem posed by herpes zoster in immunocompetent adults is pain. Herpes zoster acute pain lowers quality of life and interferes with activities of daily living. A clinician can reduce pain and improve quality of life with early antiviral therapy and scheduled analgesics.

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