

# Herpes Zoster Infection of Maxillary and Mandibular Branch: A Case Report and Current Trends in Management

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## ABSTRACT

**Introduction:** Herpes zoster (HZ), also known as shingles, is a painful vesicular rash resulting from reactivation of the virus that also causes chickenpox. Although shingles is generally regarded as a self-limited condition, it can take several weeks to resolve and has the potential for development of complications such as post herpetic neuralgia (PHN) which presents a great challenge to clinicians. The pain, however, may persist for months, even years. Post herpetic neuralgia often described as an intense burning, itching sensation.

**Case report:** Here we have described a case of herpes zoster of maxillary and mandibular division of trigeminal nerve involving left side of hard and soft palate, oropharynx, buccal mucosa, left dorsal and ventral surface of the tongue, floor of the mouth, alveolus, buccal vestibule and labial vestibule. We also have described the most effective conventional treatment options currently available.

**Conclusion:** Many treatment options are available, but all of them offering variable levels of efficacy. Conventional therapies include prescribing antivirals, corticosteroids and analgesics, anti-inflammatory agents, physiotherapy and nerve block injections.

**Keywords:** Herpes Zoster, Trigeminal nerve, Neuralgia induced cavitation osteonecrosis.

## INTRODUCTION

Herpes zoster (HZ) is a painful vesicular rash resulting from reactivation of Varicella Zoster virus (VZV) which causes chicken pox. Oral and facial lesions result from Herpes Zoster of the trigeminal nerve. Shingles is regarded as a self limiting condition. However, in patients of Herpes zoster, sometimes unnecessary tooth extraction and endodontic treatment is carried out due to the incorrect diagnosis. Development of complications such as post herpetic neuralgia, corneal scarring and blindness due to involvement of ophthalmic branch are the challenges to physician. A thorough knowledge of herpes zoster will prevent unnecessary and delayed treatment of the patients.

HZ is more commonly known as shingles, from the Latin *cingulum*, for “girdle.” This is because a common presentation of HZ involves a unilateral rash that can wrap around the waist or torso like a girdle. Elder and those with compromised immune response – such as those who have undergone organ transplantation or recent chemotherapy for cancer, or individuals with HIV/AIDS – are at greater risk for developing HZ. VZV is one of eight known herpes viruses that infect humans (Table 1).<sup>1</sup> Primary infections are clinically identified as Varicella or chickenpox. VZV is ubiquitous and highly contagious, with initial exposure typically occurring during childhood. The virus enters the host via the respiratory system, replicates at an undefined site (presumably the

nasopharynx), infiltrates the reticuloendothelial system, and eventually makes its way into the bloodstream.<sup>2</sup>

## CASE REPORT

A 43 year old patient reported with a chief complaint of pain in the lower left side of the face since 3 days. Pain was severe and continuous in nature which was aggravated on eating or speaking with no relieving factors. It was radiating till the left ear and lip region. Patient visited doctor for the same and took medicine but got no relief. Patient also gave history off ever since 4-5 days. Patient gave previous history of malignancy in rectum 2 years back and had undergone treatment for the same. On extraoral examination, unilateral diffuse multiple vesicular lesions were present on the left side of the face extending from left temporal region up to lower border of the mandible, but not crossing the midline. Lesions were also present on the left ear and crustations were present on temple region, left ear and left side of the chin. Edema with crustations was present on the left side of lower and upper lip which was tender on palpation.

On intraoral examination, diffuse multiple unilateral ulcerations of varying size were present on left side of hard and soft palate, oropharynx, buccal mucosa, left dorsal and ventral surface of the tongue, floor of the mouth, alveolus, buccal vestibule and labial vestibule. The overlying surface of ulcers were covered with slough (Fig-1).

Prodromal symptoms, ulcers and vesicles not crossing the midline, segmental distribution, absence of any dental pathology led to a diagnosis of herpes zoster of maxillary and mandibular division of trigeminal nerve. Patient was given Acyclovir (800mg 5 times daily for 7 days) which showed excellent response (Fig-2).

## DISCUSSION

Herpes zoster is a sporadic disease with an estimated life time incidence of 10-20%. The incidence of herpes zoster is up to 15 times high in patients with HIV than in non-

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HIV patients and as many as 25% of Hodgkin's lymphoma patients develop HZ. Herpes zoster is the reactivated form of Varicella Zoster virus, the same virus which is responsible for chicken pox.

Varicella zoster virus is responsible for two common infectious diseases: chicken pox and shingles. Chicken pox is the primary infection and after the initial infection the virus remains dormant until there is reactivation that may occur several decades later. The subsequent reactivation is Herpes Zoster Infection.<sup>2</sup>

Typically Herpes Zoster begins with a prodrome of headache, photophobia, malaise, shooting pain, paresthesia, burning and tenderness along the course of affected nerve. Unilateral vesicles on an erythematous base appear in clusters, chiefly along the course of affected nerve giving the characteristic clinical picture of single dermatome involvement.

HZ presenting with pain and unilateral vesicles and the diagnosis is straight forward. It is a diagnostic dilemma during the prodromal period when there is absence of lesions. Occasionally HZ may occur with pain along the course of the nerve but without the appearance of dermatome lesions, a condition known as *Zoster Sine Herpete*, which again is a diagnostic problem.<sup>3</sup>

Herpes zoster can spread via direct contact with an infected person. Virus infects the cells of the respiratory tract or conjunctival epithelium and is carried through the body via the blood stream and lymphatic system. It is then spread from the capillary epithelium to the epidermis where the viral replication destroys the basal cells.<sup>4</sup>

The prodromal stage where there is absence or no signs of vesicles or ulcers, may lead to incorrect diagnosis of pulpitis which again can lead to unnecessary endodontic treatment. HSV infections appear in a similar fashion and if localized and mild, it may be mistaken for HZ infection. Culture can be done to differentiate between herpes zoster and herpes simplex infection. Other blistering or ulcerative disease like pemphigus or pemphigoid are chronic and do not present unilaterally.<sup>5</sup>

Oral and facial lesions result from HZ of trigeminal nerve (V). Involvement of the first division of trigeminal nerve V1 (ophthalmic) lead to lesions on the upper eyelid, forehead and scalp; lesions on the midface and upper lip with second division V2 (maxillary); lesions on the lower face and lower lip with third division V3 (mandibular) involvement. V1 involvement may occasionally lead to acute retinal necrosis and should be managed by an ophthalmologist.<sup>6</sup> With involvement of V2, patient experience a prodrome of pain, burning and tenderness on the palate or gingiva on one

side followed by appearance of painful, clustered 1 to 5mm ulcers. Involvement of V3 results in ulcers of tongue and mandibular gingiva. Oral soft tissue vesicular eruptions are more persistent and lesions extend more frequently into the underlying bone causing osteonecrosis and tooth exfoliation especially in immunocompromised patients.<sup>4</sup>

20% of the cases of herpes zoster infect the trigeminal nerve; therefore oral physicians should have a thorough knowledge about the presentation of this condition, its treatment and the possible complications. The most common oral complications associated with this condition are post herpetic neuralgia, facial scarring, and osteonecrosis of the underlying jaw bone (NICO-neuralgia induced cavitation osteonecrosis) and exfoliation of teeth and in cases with ophthalmic involvement may lead to blindness.

Direct microscopy-stained smears from the base of the early vesicles show multinucleated giant cells and type A intranuclear inclusion bodies. Diagnosis of HZ can be confirmed by viral culture, direct immunofluorescence assay and PCR technique.

Viral culture is possible but VZ virus is labile and difficult to recover from swabs of cutaneous lesions. A direct immunofluorescence assay is more sensitive. PCR is useful for detecting VZ virus DNA in fluid tissues.<sup>7</sup>

The objective of conventional therapy is to accelerate healing of the lesions, reduce the accompanying pain and prevent complications. Medications include antiviral agents, corticosteroids, analgesics NSAIDs and tricyclic antidepressants.

**Antiviral agents:** Although multiple clinical investigations have demonstrated efficacy in reducing both duration of the rash and severity of the associated pain, benefit has been demonstrated in patients receiving treatment within 72 hours after onset of the rash. Efficacy in preventing post herpetic neuralgia is not as definitive as studies showed only moderate benefit in reducing its development. Three most common antiviral agents used are Acyclovir, Valacyclovir and Famciclovir. These medications are generally well tolerated with some common side effects like nausea, abdominal pain, headache and vomiting. The recommended dosages of antiviral agents used in the management of herpes zoster infection are given in table 2.

**Corticosteroids:** They are commonly been used for pain management in HZ, although clinical trials have showed inconsistent results for reducing the development of post herpetic neuralgia.

**Analgesics and NSAIDs:** Individuals with mild to moderate

Human Herpes Virus	Commonly Associated Diseases
Herpes Simplex, type 1 (HSV -1)	Herpetic oral lesions
Herpes Simplex, type 2 (HSV- 2)	Herpetic genital lesions
Varicella Zoster Virus (VZV)	Chickenpox, Herpes Zoster
Epstein - Barr Virus (EBV)	Infectious Mononucleosis
Human Herpes Virus -6 (HHV - 6)	Roseola, Mononucleosis syndrome
Cytomegalovirus (CMV)	CMV Mononucleosis
Human Herpes Virus - 7 (HHV - 7)	Currently not known
Human Herpes Virus - 8 (HHV - 8)	Kaposi's Sarcoma

**Table-1:** Types of Human herpes virus with associated diseases:



**Figure-1:** (A) Edema with crustations on the left side of lower lip and upper lip, (B) Unilateral ulcers on the ventrolateral surface of the tongue and on the soft palate, (C) Unilateral ulcers on the dorsal surface of the tongue, (D) Unilateral ulcers on the left side of the hard palate.



**Figure-2:** (A,B,C,D): Healed lesion on all areas

Medication	Dosage
Acyclovir	800 mg orally five times daily for 7 to 10 days, 10 mg per kg IV every 8 hours for 7 to 10 days
Famciclovir	500 mg orally three times daily for 7 days
Valacyclovir	1,000 mg orally three times daily for 7 days

**Table-2:** Dosages of Antiviral agents:

pain find satisfactory relief with the use of topical or oral analgesics such as aspirin, acetaminophen or ibuprofen. Several studies have showed that topical aspirin preparations can provide effective temporary relief in case of acute herpetic neuralgia and post herpetic neuralgia. In patients with severe pain, use of narcotics may be indicated. Use of nerve block injections is another option. Local Anesthetic may be injected around the affected nerves provides the pain relief typically lasting 12-24 hours. However the effectiveness of nerve block for reducing or preventing post herpetic neuralgia is questionable.

**Tricyclic antidepressants (TCA):** Low doses TCAs have been used for post herpetic neuralgia but they require at least 3 months for positive results.

**Other Natural options**

An underlying goal for employing natural therapies is to strengthen cell mediated immunity thereby allowing the body’s natural defense mechanism to control the virus and prevent recurrence. They effectively manage herpes virus, prevent and treat complication and minimize the risk of developing viral resistance.

**Dietary /multiple nutrient effects:** When consumed collectively in the form of fruits and vegetables intake showed dose related reduction in the HZ risk.

**Vitamin A:** An observational trial by High et al demonstrated an association between an increased incidence of hyporetinolemia and increased risk of HZ infection.<sup>8</sup> Vitamin A functions both as a fat-soluble vitamin and a hormone, contributing to the visual pigment rhodopsin and controlling gene transcription that allows for normal proliferation and differentiation of epithelial cells. Vitamin C, Vitamin E, lysine and zinc have demonstrated potential in the treatment of HZ.

**Enzyme therapy:** studies have concluded that use of trypsin, chymotrypsin and papain are as effective as acyclovir in reducing pain. No data is available with regard to its effect on post herpetic neuralgia prevention.

**Nutritional consideration**

**Botanicals with specific efficacy for HZ**

Capsaicin is of important in the treatment of post herpetic neuralgia because of its effect on C fiber sensory neurons. These neurons release inflammatory neuropeptide such as substance P that mediates neurogenic inflammation and chemical initiated pain.

Licorice is one of the most widely used herbs in traditional medicine. It has an anti inflammatory, mucoprotectant and antiviral activity. One constituent glycyrrhizin inhibits viral growth but when taken orally converted into glycyrrhetic acid with loss of systemic antiviral effect. It can be applied topically and is beneficial in treatment of HZ.

**Other treatment options**

**TENS:** (Transcutaneous electrical nerve stimulation)

Use of combination therapy consisting amitryptilline, topical capsaicin and TENS was recommended for the treatment of post herpetic neuralgia over antiviral therapy.<sup>9</sup>

**Vaccine**

Improved prevention and treatment strategies, including

better vaccines are needed to reduce the disease burden of zoster. ZOSTAVAX or other active or inactive formulations of zoster vaccine can be used. A better understanding of immunologic correlates of protection against zoster would help facilitate the development and evaluation of such new zoster prevention strategies.<sup>3</sup>

## CONCLUSION

Herpes zoster infection leads to various complications in the affected region if left untreated, oral physicians should have a thorough knowledge about this condition, the treatment and prevention of the complications. It can be safely stated that early diagnosis and prompt management of herpes zoster infections can go a long way in reducing the discomfort of the patient and a long term follow up of the patient should also be done to avoid further complications.

## REFERENCES

1. Roxas M. Herpes zoster and post herpetic neuralgia: diagnosis and therapeutic considerations. *Alt med rev.* 2006;11:102.
2. Mustafa MB, Arduino PG, Porter SR. Varicella zoster virus: review of its management. *J Oral Pathol Med.* 2009;38:673-688.
3. Centres for Disease Control and Prevention. *MMWR* 2008;57:1-23.
4. Tidwell E, Hutson B, Burkhart N, Gutmann L, Ellis D. Herpes zoster of the third branch of trigeminal nerve, a case report and review of literature. *Int Endod J.* 1999;32:61-66.
5. Greenberg. *Burkets Oral Medicine.* 9th edition. Hamilton: BC Decker. 2008:46-48.
6. Lynch MA. *Burkets Oral Medicine.* 9th edition. Philadelphia: LippincotCompany. 1994;18
7. John W. G, Richard J. W. Herpes zoster. *N Eng J Med.* 2002;347:340-346.
8. High KP, Legault C, Sinclair JA etal. Low plasma concentration of retinol and alpha tocopherol in hematopoietic stem cell transplant recipients: the effect of mucositis and risk of infection. *Am J Clin Nutr.* 2002;76:1358-1366.
9. Carmichael JK. Treatment of herpes zoster and post herpetic neuralgia. *Am Fam Physi.* 1991;44:203-210.

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