RESEARCH PAPER

Case Report: Herpes Zoster Reactivation Following Tooth Extraction under Local Anaesthesia

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Abstract
Herpes zoster (HZ), caused by reactivation of latent varicella-zoster virus (VZV), is a rare complication after dental procedures, particularly extractions under local anaesthesia (LA). We report a 70-year-old female patient who developed HZ involving the maxillary and mandibular division of the trigeminal nerve, three days post-extraction of upper left posterior teeth. This case underscores the importance of querying childhood chickenpox history preoperatively to anticipate such reactivations

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Introduction

Herpes zoster, also known as shingles, is caused by reactivation of endogenous latent varicella-zoster virus (VZV) that resides in a sensory dorsal root ganglion. Herpes zoster can develop any time after a primary infection with VZV (i.e., varicella or chickenpox) or varicella vaccination[1]. The activated virus travels back down the corresponding cutaneous nerve to the adjacent skin, causing typically a painful, unilateral vesicular eruption in a restricted dermatomal distribution. It is more common in persons with relative cell-mediated immunologic compromise such as elderly individuals or patients with an immunosuppressive illness or receiving immunosuppressive therapy. Immunocompromised individuals have a 20 to 100 times greater risk than immunocompetent individuals of the same age[2]. Here in our case, lesions were present unilaterally involving maxillary and mandibular divisions. VZV establishes latency in trigeminal ganglia post-primary varicella infection, common in adults from endemic regions like India. Triggers such as surgical stress, LA injection, or transient immunosuppression can cause reactivation, manifesting as painful vesicular eruptions along dermatomes. Delayed facial palsy or herpetic lesions post-dental extraction occur in up to 75% of select cases due to VZV. Awareness aids prompt management in oral and maxillofacial surgery. Among the Indian population, the part of the body which most commonly gets affected is the thoracic dermatome, followed by the trigeminal nerve.[3]

Case Presentation

A 70-year-old female from Punjab came for full mouth extraction. She denied systemic illnesses, immunosuppression, or allergies but had a childhood history of chickenpox elicited on detailed questioning and history of COVID in 2022. Intraoral examination revealed deep caries with pulp involvement and root stumps & IOPA confirmed these findings. Extraction under LA (2% lignocaine with adrenaline, posterior superior alveolar nerve block and greater palatine nerve block) was uneventful under aseptic conditions, with post-op instructions given.

On postoperative day 3, she reported malaise, low-grade fever, and burning pain on the left side of her face. Extra orally, patient initially experienced tenderness and erythema on chin, followed by erythematous vesicles and crusting on the left side of her face involving cheek and chin region (V2 and V3dermatome). The patient also reported continuous, dull aching pain in the ear radiating towards the head. No facial palsy or ocular involvement was noted. Provisional diagnosis: HZ reactivation post- LA extraction.

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Treatment and Outcome

Oral acyclovir 800 mg five times daily for 7 days, plus analgesics and chlorhexidine mouthwash were prescribed. Symptomatic relief occurred within 5 days; vesicles crusted by day 10. At 1-month follow-up, lesions healed with healthy mucosa and minimal scarring. No post-herpetic neuralgia was observed at 3 months.

Discussion

Late or delayed complications following administration of local anaesthesia and tooth extraction may occur hours to days after the procedure. These complications include conditions such as alveolar osteitis (dry socket)[4], postoperative infection, reactivation of herpes simplex infection, trismus, delayed bleeding, localized osteomyelitis, paraesthesia due to nerve injury, hematoma formation, and soft-tissue ulceration. Although these events are relatively uncommon, they can significantly affect patient comfort and healing, and therefore require early recognition and appropriate management.. One rare complication of local anaesthetic administration is post-anaesthetic herpetic lesions. The patient occasionally reports after the second post- operative day with ulceration around the injection site. Recurrent aphthous lesions can be differentiated from varicella-zoster virus (VZV) infections based on the clinical presentation (extraoral and intraoral distribution pattern) and other burning symptoms. VZV is a double- stranded DNA, enveloped virus of the Herpes viridae family that is found exclusively in humans. It is one of the nine human herpes viruses in this family that have been reported to cause disease in humans.[5] The incidence of varicella in tropical climates is 13–16 cases/1000 people/year. In India, the incidence of varicella is higher in adults.[6] VZV, which infects almost 99.5% of the population of more than 40 years of age, gains access to the cranial nerve or dorsal root ganglia during varicella in childhood. After the primary infection, the herpes virus remains dormant within the neural ganglia. A secondary outbreak of herpes zoster occurs after a latency of several decades when cell- mediated immunity to VZV declines.

Diagnosis of herpes zoster is challenging when the patient does not reveal the disease before extraction. Risk factors for sudden exacerbation include HIV, malignancy, cytotoxic drugs, steroids, radiation therapy, stress, alcohol abuse and dental trauma.[7] Most subjects typically have one episode of herpes zoster in their lifetime, although recurrent episodes are not uncommon.[8] Pelloni et al. stated that there are few rare cases in the literature reporting herpes involving all three or two branches of trigeminal nerve and skin involvement during HZ infection has been rarely reported. It is important that dental and oral surgeons should be aware of and more familiar with this presentation.[9] Early diagnosis and antiviral therapy with Acyclovir, famciclovir or valacyclovir are recommended. Antiviral therapy should be initiated early in the course of the disease, which might decrease the severity of the lesion and lessen the healing time.[10]

Prevention

According to the literature, there is no means of preventing the reactivation of the virus in sensitised individuals. However, the clinical features of the disease can be reduced to an extent by treating it during the prodromal phase.

From our experience, we designed the following questions to be asked of the patient before the procedure like Previous history of chicken pox infection, Skin rash, blister, vesicles, vaccinated against varicella zoster, Antiviral therapy, Steroid therapy, and immunocompromised status. These simple questions will help the surgeon to have a safe practice and prepare for any upcoming complications.

With the increasing number of immunocompromised cases, dental surgeons will expect to encounter more post-anaesthetic lesions. The dental surgeon should be familiar with the signs and symptoms of the patient experiencing herpes zoster infection in branches of the trigeminal nerve. Immunocompetence status and age- specific screening should be warranted in case of atypical involvement and according to the patient's history, while treatment with antiviral drugs should be rapidly initiated in patients at risk for complications.

Apart from antiviral medication, Malamed suggests tannic acid preparation (zilatin) can be applied to the lesion intra and extraorally.[11]

For the maintenance of oral hygiene, it is advised to use mouthwash which contains azulene sulfonic acid and physical cleaning of oral mucosa is encouraged.[12] in our case, the patient presented with prodromal symptoms of fever, malaise and characteristic signs of extraoral herpes zoster with the presence of vesicles on the skin and lips. Vesicle rupture can result in erosions covered by pseudo membranes and haemorrhagic crusts, followed by healing of the lesion with healthy mucosa. The patient is under follow-up and has not presented with post-herpetic neuralgia, which is one of the frequent complications of herpes zoster.

Conclusion

HZ post-extraction under LA is rare but manageable with vigilance. Detailed history and rapid referral optimize outcomes.

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