MULTIPLE ORO-FACIAL COMPLICATIONS OF HERPES ZOSTER INFECTION IN AN ELDERLY: A CASE REPORT

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ABSTRACT

Introduction: **Herpes zoster (HZ) is a viral disease with a global health burden which significantly impacts on the quality of life. HZ is caused by reactivation of the varicella-zoster virus and its complications are dependent on multiple factors like immune suppression, psychological stress, malnutrition, co-morbidities, duration of HZ infection and old age. Some of the complications include secondary bacterial infection, post-herpetic neuralgia, scarring, nerve palsy, and viral encephalitis. These complications could present as single or rarely as multiple entities in an individual.**

Materials & Methods: **We present a case of HZ infection affecting the mandibular division of trigeminal nerve in a 78-year-old widow. The patient presented with multiple complications including hyper- pigmented scarring, post herpetic neuralgia and chronic non-suppurative osteomyelitis of the left mandible. This case report highlights the presentation of multiple complications from HZ infection especially among the elderly.**

Conclusion: **Early diagnosis and prompt treatment of HZ infection are highly essential for reduced risk of complications.**

Keywords: Herpes zoster; Chronic osteomyelitis; Post-herpetic neuralgia; Scarring

INTRODUCTION

Herpes zoster (HZ), also known as shingles is a viral infection caused by the reactivation of latent varicella zoster virus within the sensory dorsal root ganglia, cranial ganglia or autonomic ganglia due to depressed immunity, psychological stress or advancing age. It presents as a unilateral, localized, self-limiting, painful, erythematous maculopapular rash along the affected dermatome.[1] HZ occurs mostly among the elderly and the incidence ranges from 3.9-11.8 per 1000 persons per year among individuals who are 65 years and older.[2] The reactivation of latent vaccine preventable varicella zoster virus (VZV) in the dorsal root ganglia causes herpes zoster which mostly affects the thoraco-lumbar dermatome. When the trigeminal nerve is affected, the ophthalmic division is mostly involved while the mandibular division is least affected.[3] Though a self-limiting disease, it may be associated with varying complications including postherpetic neuralgia, pigmentary changes, scarring in the form of hypertrophic or keloidal scars, secondary infections, acute retinal necrosis, blindness, cerebellar ataxia, Guillain-Barre syndrome, Ramsay-Hunt syndrome, meningoencephalitis, stroke, and myocarditis.[2,4] These complications may be single or in rare cases occur as multiple complications in an individual depending on severity of immune compromise and co-morbidity status.[4]

Postherpetic neuralgia (PHN) is one of the most common complications of HZ and it is a debilitating, neuropathic pain syndrome characterized by constant or intermittent burning, stabbing, shooting, electric shock-like pain which occur usually after resolution of herpes zoster.[6] PHN persists in the area where the rash was once located, it continues more than 90 days after rash onset and could last for months or even years.[7] PHN is considered the most debilitating sequelae of HZ as it impairs an individual's quality of life across the four health domains which include physical, psychological, functional and social.[1] In PHN, the threshold of action potential of the affected nerve is lowered thus resulting in disproportionate and

amplified responses to stimuli (hyperalgesia) and spontaneous discharge of pain even without any pain stimulus (allodynia).[8] A meta-analysis revealed some risks associated with developing PHN following HZ infection as HIV/AIDS, immunosuppression, family history, older age, trauma, females, and presence of comorbidities like diabetes and rheumatoid arthritis[9]. The lifetime incidence of zoster is 30% and an estimated 12.5% of zoster patients aged 50 years develop PHN.[10]

Although HZ mostly affects the thoracolumbar dermatomes, the trigeminal nerve is affected in 13% of cases especially its ophthalmic division.[3] The involvement of the mandibular division (herpes zoster mandibularis) or maxillary division is characterized by oral manifestations including internal resorption, tooth exfoliation and chronic osteomyelitis of the jaw.[11]

We present the case of HZ infection (HZI) affecting the mandibular division of trigeminal nerve in a 78-year-old woman with multiple orofacial complications including PHN, chronic osteomyelitis of the jaw and hyperpigmented scarring of the affected region. This case report highlights the presence of multiple complications from HZI especially among the elderly. Therefore, early diagnosis and prompt treatment of HZ and its complications is highly desirable as studies have shown a faster resolution of HZ symptoms and its complications when treatment is initiated early.[4,5]

CASE PRESENTATION

A 78-year-old widow presented at the oral diagnosis clinic of the University College Hospital, Ibadan. Her presenting complaint was spontaneous, constant burning pain on the left side of the face which started about one month earlier to her presentation. There was associated otalgia, tinnitus and feeling of blockage of the left ear, paraesthesia on the left side of the face as well as scarring with significant affectation of her daily activities including difficulty in sleeping, hearing, mastication, and psychosocial existence.

Patient reported a poorly treated episode of chicken pox infection about 1 month prior to the pain experience. She also gave history of similar chicken pox infection during childhood. There was no history suggestive of systemic conditions like hypertension, diabetes, peptic ulcer disease or drug allergies.

On examination, she was an acutely ill-looking elderly woman in obvious painful distress with a pain score of 10/10 on the numeric pain rating scale. She appeared mildly-pale but was well-hydrated afebrile, anicteric and acyanosed. Her blood pressure, respiratory rate, temperature and pulse rate were all within the normal reference ranges. Extraoral examination revealed facial asymmetry evidenced by diffuse left facial swelling and multiple linear patterned hyperpigmented maculo-papular lesions on the left side of the face extending from the left symphyseal region to the left pre-auricular region. Some focal hypopigmented patches were also seen on the symphyseal region.

Intraoral examination revealed poor oral hygiene, an area of exposed tarnish-brown coloured necrotic bone in the left mandibular alveolus extending from central incisor to the first premolar with missing teeth 31, 32, 33 while 41 and 34 were moderately mobile with grade two mobility (mesio-distal and labio-lingual).

The requested investigations included random blood glucose which was 86mg/dl, packed cell volume was 32% and retroviral screening was non-reactive. Radiographic investigation (orthopantomogram) showed patchy opacities within a radiolucent area in the affected region. A diagnosis of post-herpetic

Figure 1: Pre- treatment pictures showing **(A)** skin hyperpigmentation on the left pre-auricular, zygomatic and mandibular regions; and **(B)** alveolar bone necrosis of left parasymphyseal region.

Figure 2: Orthopanthomogram revealed moderate alveolar bone destruction involving 33, 34, 35 and 36 as well as periapical radiolucency of the mesial and distal roots of 36.

neuralgia complicated by chronic non-suppurative osteomyelitis secondary to HZ was made.

A multidisciplinary management approach ensured extraction of associated mobile teeth and debridement of devitalized alveolar bone by oral surgeons. This was followed immediately by antibiotic therapy (Tabs Co-Amoxiclav 625mg 12 hourly for 1 week, Tabs Metronidazole 400mg 8hourly for 1 week). Pain management was carried out by oral physicians using anticonvulsant (Tabs Pregabalin 75mg 8 hourly daily) and antidepressant (Tabs Amitriptyline 12.5mg nocte) for 2 weeks. There was minimal pain control using pregabalin and amitriptyline while patient still experienced constant burning sensation in the affected region. Patient was referred to the palliative care unit of the hospital for opioid treatment which was administered by the anaesthetists as oral morphine 5mls 8hourly for 6 weeks and later reduced to daily dosage for 4weeks). There was adequate pain control within three months of management as evidenced by patient's reduced pain score from initial score of 10/10 as worst pain to 3/10 using the numeric pain rating scale. Oral prophylaxis was carried out by dental therapists and removable partial denture was then fabricated by the prosthodontists to replace the missing teeth within six months of management. Altogether, there was significant improvement clinically as evidenced by improved oral health status and also improved quality of life in the patient.

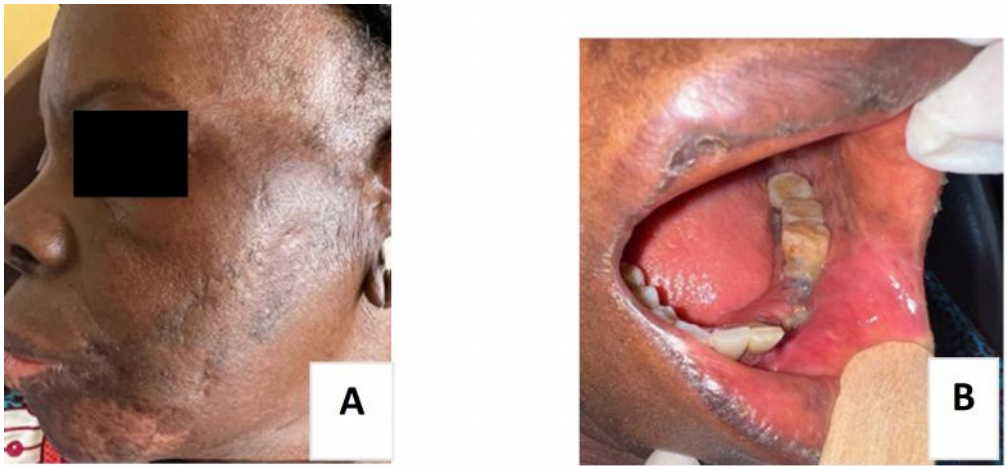

Figure 3: Post- treatment pictures showing **(A)** significant clearing of skin hyperpigmentation and **(B)** sutured mucosa over debrided alveolar bone of left parasymphyseal region.

DISCUSSION

This case report highlights an uncommon pattern of multiple complications from HZ in an elderly. In our environment, there is paucity of data on herpes zoster specifically affecting the mandibular nerve[11]. The risk factors for reactivation of varicella zoster virus (VZV) include older age and immunocompromised status

from conditions like HIV infection, lymphoma, leukemia, bone marrow transplant, solid organ transplant, and immunosuppressive medications[1,12]. Surprisingly, none of these co-morbidities was present in our case at the time of presentation. However, patient's anemic condition which may be related to malnutrition could contribute to patient's immunocompromised status thereby leading to the reactivation of VZV and subsequent development of HZI. Though the history of vaccination was not ascertained in our case, the role of vaccination using recombinant zoster vaccine to reduce the disease burden among the elderly has been documented[13].

The extraoral and intraoral findings in our case are similar to those seen in an Indian case report presented by Ashi *et al.*[14] except for gender difference and right-side affectation. In a decade review of HZ-osteomyelitis by Tabrizi *et al.*[15], they revealed slight male preponderance, mean age in sixth decade of life and the body of the mandible as the most commonly affected site. Similarly, other reports found the mandibular body and symphysis as the commonest sites of involvement in HZ mandibularis.[16,17] Herpes zoster mandibularis is associated with intraoral complications including teeth devitalization, internal root resorption, teeth tenderness on palpation, tooth exfoliation and alveolar bone necrosis.[3] Though the etiopathogenesis of HZ- induced osteonecrosis of the jaw is not fully understood, some proposed pathologic mechanisms include infarction of the trigeminal vessels due to local vasculitis leading to ishaemic injury, or vasculitis within the periosteum and periodontium due to direct invasion of the blood vessels by the virus causing a segmental granulomatous vasculitis within the bone.[13,18] Another hypothesis states that systemic viral infection leads to damage to the odontoblasts which induce pulp necrosis or that pre-existing pulpitis, periodontitis, or prior surgical procedures can induce osteonecrosis.[14] In addition, scarring has been documented in a prospective study of HZ-complications among an Indian population[4] and our case also presented with this clinical profile.

The management of HZ is usually multidisciplinary with goals of alleviating pain, managing complications and rehabilitation[19]. In our report, we engaged a multidisciplinary approach which included oral and maxillofacial surgeons, oral physicians, anaesthetists, dental therapists and prosthodontists to achieve successful treatment outcome and improve quality of life.

CONCLUSION

Herpes zoster is a viral infection that can present in the oro-facial region and its complications may be due to an interplay of factors including poor oral hygiene, direct viral invasion being superimposed with oral bacterial infection, as well as reduced blood perfusion to the bones particularly in the elderly. Our report highlighted the possibility of multiple complications of HZI in the elderly without any known debilitating systemic condition, however anaemia due to malnutrition, old age and poor oral hygiene could be possible etiologic factors in this case. Therefore, adequate balanced diet and routine oral prophylaxis should be emphasized among the elderly as preventive measures for old age –related morbidities including HZI and its complications.

Conflict of Interest Statement

The authors affirm that they have no conflict of interests to declare.

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