Herpes Zoster: a case series with different manifestations

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ABSTRACT

Background: The incidence of herpes zoster appears to correlate inversely with the host’s ability to mount a cellular immune response. The disease is characterized clinically by an acute rash with herpetiform blisters on the skin and mucous membranes. This case series presented the different clinical presentations of herpes zoster infection in three patients with different underlying diseases in the ophthalmic, trigeminal, cervical, and thoracic dermatomes.

Case Presentation: Three cases of herpes zoster were observed in this case series. The first case involved the ophthalmic division of the trigeminal nerve. The second case involved the cervical nerve, and the last case involved the thoracic nerve. All had undergone varicella infection in childhood and suffered from various states leading to immunosuppression. Tzanck smears were performed in all cases, which showed multinucleated giant cells. After treatment following the herpes zoster protocol, all cases healed without complications.

Conclusion: Reactivation of the varicella-zoster virus may occur spontaneously or when host immunity is weakened. Increasing age, a physical trauma (including dental procedures), psychological stress, malignancy, and immunocompromised conditions, including transplant recipients, pregnancy, and HIV infection, are predisposing factors for varicella-zoster virus reactivation.

Keywords: Varicella Zoster, Herpes Zoster, Ophthalmic, Trigeminal.

CASE REPORT

INTRODUCTION

Herpes zoster refers to a vesicular rash usually caused by the reactivation of latent varicella-zoster virus (VZV) (chickenpox) from neurons in the dorsal root ganglia. Herpes zoster usually occurs on the thoracic or cranial dermatomes. The lifetime risk of shingles is estimated to be 10-20% but increases by 50% in persons over 80 years of age. Reactivation can occur for various reasons, including trauma, aging, or immunodeficiency. Whether other factors, such as radiation, physical trauma, certain medications, infections, and stress, can also trigger shingles is unclear. It is also not entirely clear why circulating varicella antibodies and cell-mediated immune mechanisms do not prevent recurrent overt disease as with most other viral infections. The incidence of zoster appears to correlate inversely with the ability of the host to enhance the cellular immune response. However, many patients with zoster have normal immunity. In these patients, it has been postulated that zoster occurs when VZV antibody titers and cellular immunity decline to a level that no longer completely prevents a viral invasion.

Herpes zoster usually erupts in one or two contiguous dermatomes, with the thoracic (50-60%), cervical (10-20%), and trigeminal (10-20%) dermatomes more commonly affected, while the lumbar (5-10%) and sacral (5%) dermatomes are also less commonly affected. In immunocompetent patients, involvement of nonadjacent dermatomes is never seen, although overlap of adjacent dermatomes can be demonstrated in 20% of cases. Involvement of the maxillary and mandibular branches without the involvement of the ocular branch accounts for 1.7% to 2% of herpes zoster cases, which is relatively rare. This case series aims to highlight the different clinical presentations of herpes zoster infection in three patients with different underlying diseases involving the ophthalmic trigeminal dermatomes, cervical, and thoracic.

CASE REPORT

A retrospective case series study of three patients diagnosed with herpes zoster from May to July 2018. Data were collected, including chief complaint, clinical symptoms, dermatologic status and supportive examinations, and patient management and follow-up. All aspects of the study protocol were in accordance with the Declaration of Helsinki and were approved by the hospital’s institutional review board. The clinical characteristics of the patients are summarized in Table 1.

Patient I

A 58-year-old man complained of several blisters on his right forehead three days ago: the blisters were painful and affected his eyelids; sometimes, the pain caused his eyes to water and made them difficult to open. He also had a fever, cough, and cold two days before the blisters appeared, but his fever had gone by the time he came to the outpatient clinic; he complained that he felt exhausted because he had to take
Table 1. Summary of cases.

<table>
<thead>
<tr>
<th>Patient</th>
<th>Age</th>
<th>Sex</th>
<th>Chief Complaint</th>
<th>Dermatome, Lateralization</th>
<th>Clinical Findings</th>
<th>Tzanck Smear</th>
<th>Therapy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient I</td>
<td>58</td>
<td>Male</td>
<td>Several blisters on the right forehead</td>
<td>Trigeminal, Ophthalmic division, right</td>
<td>Multiple erythematous vesicles</td>
<td>Multinucleated giant cells</td>
<td>Acyclovir 5 x 800 mg, Analgesic Salicylic talc</td>
</tr>
<tr>
<td>Patient II</td>
<td>57</td>
<td>Female</td>
<td>Blisters on the upper right arm</td>
<td>Cervical, right</td>
<td>Multiple groups of vesicles and bullae on the erythematous macule</td>
<td>Multinucleated giant cells</td>
<td>Acyclovir 5 x 800 mg, Antihistamine Salicylic talc</td>
</tr>
<tr>
<td>Patient III</td>
<td>29</td>
<td>Female</td>
<td>Group of blisters in the left intercostal area</td>
<td>Thoracal, Left</td>
<td>Groups of vesicles based on erythematous skin macules are sharply demarcated and unilaterally distributed.</td>
<td>Multinucleated giant cells</td>
<td>Acyclovir 5 x 800 mg, Salicylic talc</td>
</tr>
</tbody>
</table>

Care of his father, who was in the hospital. He suffered from chickenpox as a child. The patient does not have diabetes mellitus or hypertension. The patient has never had chemotherapy. He has no history of other diseases, and none of his family members suffer from the same condition.

On physical examination, dermatological status showed multiple erythematous vesicles, and the skin around them is of normal color in the right forehead (Figure 1a-b). Visual complaints did not occur in this patient. Tzanck smear results showed multinucleated giant cells (Figure 2a). The patient was diagnosed with herpes zoster ophthalmicus. The patient has been treated with acyclovir 5 x 800 mg, mefenamic acid, and salicylic t alc. At follow-up on the seventh day after treatment, the pain subsided, and erosions appeared (Figure 1c-d). By day 15, the eyes watered only occasionally, the pain was no longer present, and erosion and crusting had disappeared (Figure 1e-f).

Patient II

A 57-year-old woman was referred from the pulmonary department to the dermatology department, complaining of a blister on her right arm two days before her referral. Initially, the patient complained of a red and itchy papule on his right arm, which developed into a blister the next day. The patient admitted that he had smeared eucalyptus oil on the papule. History of insect bites, previous similar illnesses, and illnesses in the family, among friends, or in the neighborhood were denied. The patient had a varicella infection as a child. At the time of consultation, the patient had been admitted to the internal medicine ward for ten days before being consulted with a diagnosis of malignant left pleural effusion and adenocarcinoma of the left lung.

On physical examination, dermatological status showed multiple groups of vesicles and bullae on the erythematous macule, with normal skin between the groups of lesions in the upper right arm (Figure 3a-c). Laboratory results showed an increase in the white blood cell count to 15,300. Tzanck smear results showed the presence of multinucleated giant cells (Figure 3b), and the patient was diagnosed with herpes zoster thoracis. The patient was treated with acyclovir 5 x 800 mg, chlorpheniramine maleate 3 x 4 mg, and salicylic t alc. After two days of treatment, the itching and the redness disappeared. On the second day, erosions and crusting occurred, and therapy was continued. Itching and redness had disappeared by the fifth day, but erosions and crust were still present (Figure 3d-f).

Patient III

A 29-year-old pregnant woman was consulted with a painful bladder cluster on her left chest. Three days before she came to the emergency room, she had a group of painful blisters on her right thigh. Before the appearance of the lesions, red spots and pimples appear, accompanied by pain and burning, which quickly turn into blisters. The patient also complained of malaise and headache. The patient also had chickenpox as a child. She has no other known illnesses, and none of her family members suffer from the same disease. The patient is also 36 weeks pregnant and has her pregnancy routinely evaluated in the gynecology department.

On physical examination, dermatological status showed groups of vesicles based on erythematous skin macules, sharply demarcated and unilaterally distributed according to the dermatome thoracic sinistra. The skin between the groups of blisters was normal (Figure 4a-c). Tzanck smear results showed multinucleated giant cells (Figure 2a-c). The patient was diagnosed with herpes zoster thoracis. The patient was treated with acyclovir 5 x 800 and salicylic talc for seven days. On the eighth day after treatment, the vesicles disappeared and were replaced by crusts (Figure 4d-f). By day 14, crusting had decreased (Figure 4g-i).

DISCUSSION

Varicella zoster virus (VZV) is responsible for two primary clinical infections in humans: chickenpox or varicella (primary disease) and herpes zoster. Herpes zoster is caused by the reactivation of a latent virus acquired from varicella.4,6 Reactivation of VZV can occur spontaneously or when host immunity is weakened. Increasing age, a physical trauma (including dental procedures), psychological stress, malignancy, radiation therapy, and immunocompromised conditions, including transplant recipients, steroid
therapy, pregnancy, and HIV infection, are predisposing factors for VZV reactivation.28,9 The disease is more common in adulthood and affects men and women equally. The age of the patients ranged from 23 to 80 years, with the majority of herpes zoster cases occurring in patients older than 40 years. Although all three individuals in this case series had childhood chickenpox infections, each patient had a different predisposition to VZV reactivation. In patient one, the patient is not only older but also in poor health due to exhaustion from caring for his sick father. In patient two, the malignancy condition predisposes to viral reactivation, while in patient three, pregnancy is a factor that reduces immunity.

Herpes zoster can affect all sensory ganglia and cutaneous nerves, especially the dermatomes innervated by spinal cord segments T3-L2; however, about 13% of patients have an infection affecting one of the three branches of the trigeminal nerve. The trigeminal nerve’s ophthalmic branch (V1) is most affected, with lesions on the upper eyelid, forehead, and scalp.6 In the case of patient I, the ophthalmic branch of the trigeminal nerve was affected. Herpes zoster ophthalmicus (HZO) can occur from the reactivation of latent VZV infection in the trigeminal ganglion, which contains the ophthalmic branch of the trigeminal nerve. HZO is a sporadic form of herpes zoster. Patients with HZO usually present prodromal pain in a unilateral V1 dermatome, followed by an erythematous vesicular or pustular rash in the same area. The pain is neuropathic, and patients describe the sensation as “burning,” sometimes with paresthesias. In addition, the herpes rash may be preceded by constitutional symptoms such as fever, fatigue, malaise, and headache. In patients, ocular symptoms are limited to pain in the eye and sometimes tearing, preceded by malaise and physical fatigue.

In contrast to cases 1 and 3, the patient in case 2 felt no pain at the lesion. The itching was predominant. The cervical and lumbosacral segments have a low zoster incidence and are generally reported in the lower cervical (C5-7) or lumbosacral distribution.13 In case 3, pregnancy can weaken the patient’s immune system and cause reactivation. In pregnant women, herpes zoster most commonly forms in the intercostal area near the bra line. Occasionally, the scapula, lumbar region, and limbs are also reported. Herpes zoster affecting dermatomes T10 through L1 poses a theoretical risk for intrauterine infection because sensory nerves to the uterus originate from this segment. Still, no cases with this scenario have been reported.13 In addition, although there have been reports of vesicles spreading to the perineum, labia majora, and labia minora in pregnant women, there is no clinical or serologic evidence of VZV infection in children of these mothers.8,13,14

The prodromal phase of the virus precedes skin manifestations by three to five days in 80 percent of individuals with herpes zoster. Unlike the images of zoster lesions, prodromal symptoms are not uniform from the midline. Sometimes general symptoms such as headache, fatigue, malaise, or a mild increase in temperature are cited. The expected duration is 3-5 days, and the prodromal phase is characterized by pain in the affected nerves. The prodromal phase begins 2-4 days before the rash or mucosal vesicles appear. The prodromal phase is followed by the acute phase, characterized by the development of linear grouped vesicles along the unilaterally affected nerve. Within 3-4 days, the vesicles become pustular and ulcerated, followed by eschar formation, usually occurring after 7-10 days. However, the lesions may take about 2-3 weeks to heal in otherwise healthy patients. The active or “eruptive” phase of herpes zoster is the most contagious and can pose a significant risk of cross-infection.2,3

Herpes zoster infection can often be diagnosed clinically by a precise unilateral distribution of lesions. Viral detection in human fibroblast cell cultures remains the best diagnostic method for detecting multinucleated epithelial cells.7,11 However, this cannot distinguish between herpes simplex virus and VZV. Another method with higher sensitivity and rapid diagnosis is the detection of direct immunofluorescence antibodies against VZV, which is positive in up to 80% of cases. Polymerase chain reaction can detect viral antigens. In recurrent cases, serum immunoglobulin M (IgM) levels have increased ten days after the appearance of vesicles. IgG and IgA
CASE REPORT

Patients were treated with antiviral drugs and supportive therapy in all three points for one week. Acyclovir 800 mg (5 times daily for seven days) is prescribed to control the active viral phase.\textsuperscript{2,21}

The limitation of this case series design is the lack of a comparison group. With small case series, we will not have the power to detect differences in the risk of an outcome, especially if it is not uncommon. I suggest that future studies increase the number of participants and give enough details such as exposure, symptoms, signs, intervention and outcome.

CONCLUSION

Herpes Zoster represents a reactivation of VZV in the host. Patients with Herpes Zoster infection from 3 cases can present with varied manifestations. Acyclovir has a highly favorable therapeutic index because of its preferential activation in infected cells and preferential inhibition of the viral DNA polymerase. Acyclovir therapy is an effective treatment for herpes zoster with a dose of 800 mg 5 times for seven days.

CONFLICTS OF INTEREST

The authors state that there is no conflict of interest.

ETHICAL CONSIDERATION

This case report has obtained consent from the three patients as the study subjects.

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AUTHORS’ CONTRIBUTIONS

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REFERENCE


