

DISSEMINATED CUTANEOUS ZOSTER CAN OCCUR IN HEALTHY INDIVIDUALS: A CASE SERIES

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ABSTRACT

Disseminated cutaneous zoster is a severe complication of varicella-zoster-virus infection. Zoster is known to occur in healthy individuals, while its disseminated cutaneous form usually occurs in severely immunocompromised hosts. Though uncommon, disseminated cutaneous zoster has been reported in healthy individuals, where age-related decline in cellular immunity is a single risk factor. We report three cases of disseminated cutaneous zoster in elderly patients aged from 71 to 80 years, discussing their clinical background, progression and outcome.

Keywords: Disseminated Zoster; Herpes Zoster; Immunocompetent; Elderly; Immunocompromised; Healthy; Post-herpetic neuralgia; Shingles

INTRODUCTION

Varicella-zoster-virus (VZV) is a neurotropic virus that causes primary varicella and subsequently remains dormant in the dorsal root and cranial nerve ganglia. Upon reactivation, it spreads from a single ganglion to the corresponding dermatome and neural tissue of the same segment, manifesting as herpes zoster.¹ The main risk factor for the development of zoster is age, and zoster is thought to occur as a consequence of declining VZV-specific cell mediated immunity occurring physiologically with age, or by any other forms of immunosuppression. Disseminated cutaneous zoster is one of the many debilitating complications of herpes zoster and typically occurs in an immunocompromised state. Most cases have been described to have a background history of malignancy, lymphoproliferative disorders, Human Immuno-deficiency Virus (HIV), or chemotherapy. Rare in immunocompetent individuals, cutaneous dissemination may also be followed by visceral involvement. We shall discuss three cases of disseminated cutaneous zoster, including that of a previously healthy individual.

CASE 1

A 79-year-old man presented with a 5-day history of a painful, vesicular eruption over the left side of the chest. This was preceded by a week of sharp, left-sided chest pain for which he

had self-medicated with paracetamol. Aside from a childhood history of chickenpox and an uneventful appendicectomy, he had no significant history of chronic medical illness, medication or preceding symptoms.

On examination, blisters were noted in a linear, band-like cluster, along the left T7, T8 dermatomal distribution, not crossing the midline (Figure 1a). Multiple, diffuse vesicles were seen over the anterior chest and back (Figure 1b). Oral mucosa and genitalia were unaffected. Examination of other systems was unremarkable.

Routine full blood count, renal, liver panels and chest x-ray were within satisfactory limits. Specimens from the vesicles returned positive for VZV polymerase chain reaction (PCR). Further evaluation for underlying causes of immunosuppression (tumor markers, myeloma panel, retroviral screen and hepatitis markers) was negative.

Intravenous acyclovir was administered with simple oral analgesia. There was no further progression, the vesicles eventually dried up and he was discharged well.

Upon regular follow-up, he reported persistent pain despite resolution of the skin lesions, and was eventually referred to and treated for post-herpetic neuralgia (PHN) by the pain team.

CASE 2

An 80-year-old man, with diabetes and hypertension, reported recent right-sided anterior chest pain for which he consumed traditional herbal medication. 2 days later, blisters appeared over his right shoulder and progressed to involve the whole trunk despite immediate cessation of the herbs.

At the emergency department, multiple annular and vesicular lesions were found over the back, chest and neck, with no mucous-membrane involvement (Figure 2). Due to the recent drug history, the initial impression was that of drug-induced erythema multiforme. He was eventually reviewed by the dermatology team when the vesicles rapidly evolved into multiple herpetiform bullae (Figure 3). Specimens of the vesicles were positive for VZV PCR, and a skin biopsy performed over the back revealed features of a viral-induced vesicle, consistent with that of VZV infection. The lesions soon resolved and he was discharged well after a course of intravenous acyclovir. Retroviral screen, hepatitis and tumor markers were negative.

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CASE 3

A 71-year-old man with ischemic heart disease, hypertension and dementia was admitted for infected sacral sores. He was a nursing home resident, bedbound and minimally communicative for the past 2 years. Intravenous antibiotics were administered to treat the sepsis. Unfortunately, he also developed multiple vesicles, first over the left T8 dermatome and then over the neck and trunk. Specimen of vesicular fluid returned positive for VZV culture and PCR.

A course of acyclovir was administered along with the antibiotics. After regular deblistering and wound care, he was discharged upon resolution of the vesicles and pyrexia.

DISCUSSION

Disseminated cutaneous zoster is defined as greater than 20 vesicular lesions outside the primary and immediately adjacent dermatomes.²

Each of the cases in this series presented with dermatological features that were consistent with this criteria. These clinical findings were also accompanied by positive laboratory results which included that of VZV PCR and VZV viral cell cultures, thus supporting the diagnosis of disseminated cutaneous zoster.

Disseminated cutaneous zoster is relatively uncommon, and typically occurs in the setting of immunosuppression. Its incidence is as high as 10–40% in immunocompromised hosts, some of whom may develop visceral involvement.²⁻⁷ Most cases have been described in patients with depressed cell-mediated immunity such as Human Immuno-deficiency Virus (HIV) infected patients, patients with malignancy, lymphoproliferative disorders, and recipients of chemotherapy or immunosuppressants.²⁻⁷

Cases of disseminated zoster should be diagnosed early and promptly treated with a 5-7 day course of intravenous acyclovir at 10mg/kg every 8 hours.^{5,7}



Figure 1a. Deblistered erosions in a linear, band-like cluster along the left T7, T8 dermatomal distribution, not crossing the midline



Figure 2. Multiple vesicles in a generalised distribution over the trunk, neck and the back of the scalp



Figure 1b. Adjacent to the primary dermatomal lesion, there are also multiple vesicles distributed diffusely across the chest and back in a non-dermatomal fashion



Figure 3. The vesicles evolved into large herpetiform bullae over the right shoulder. The other accompanying vesicles continued to spread across the entire trunk

Unlike Patient 3 who had multiple co-morbidities, Patient 1 was premorbidly well and showed no clinical or laboratory evidence suggestive of immunocompromise. The one possible predisposing factor in Case 1 is that of age-related decline in cellular immunity against VZV. To date, one rare case of disseminated zoster in an immunocompetent 39-year-old has been reported.⁸ Otherwise, the average age for disseminated herpes in immunocompetent patients is 65.4 years.⁸ Incidentally, patients in this series, immunocompetent or not, were above 70 years old. It would therefore be prudent to identify age as a significant risk factor for more severe forms of zoster.

Furthermore, reports have shown that developing disseminated zoster predisposes one to more debilitating complications such as PHN and visceral involvement.² Visceral zoster has been reported to occur in 10% of patients with disseminated cutaneous zoster, but to the best of our knowledge, has not been described in immunocompetent individuals.⁸

Patient 2 was warned of potential complications, but has since remained asymptomatic during outpatient follow-up. While patient 1 required treatment for PHN, he fortunately did not reveal any evidence suggestive of visceral involvement. Stratman et al reported an unusual case of a 77-year-old male who developed disseminated visceral zoster in the stomach that was confirmed histologically with a gastric biopsy.⁸ In this case, the patient was significantly immunocompromised, with a background of non-Hodgkin's lymphoma, for which he had undergone 8 years of aggressive chemotherapy.

Viral dissemination generally occurs 6 to 10 days from the initial onset of localised cutaneous lesions. As such, the prevention of disseminated zoster begins from the time a patient first presents to the clinician with early zoster. In uncomplicated herpes zoster, it is important to initiate antiviral therapy as soon as possible, preferably within 48 to 72 hours from the onset of the cutaneous symptoms.⁹ Early commencement of therapy aims to relieve symptoms and prevent further complications such as PHN and secondary bacterial infections. Above all, in the context of our discussion, this reduces the risk of viral dissemination.

CONCLUSIONS

Disseminated zoster is a debilitating complication of herpes zoster, and generally occurs in severely immunodeficient hosts. While dissemination can present with visceral involvement, such visceral dissemination has not been described in immunocompetent patients.⁸ Disseminated cutaneous zoster, however, may rarely occur in immunocompetent individuals.^{5,7} Our case series illustrates that cutaneous dissemination of zoster can occur in healthy individuals, with a propensity towards elderly persons.¹⁰ Increased age is a risk factor for developing more severe forms of herpes zoster, as a result of age-related

decline in cell-mediated immunity. Immunocompetent but elderly individuals should therefore be identified as a group more susceptible to cutaneous dissemination compared to that of younger counterparts. Vigilant monitoring and regular follow-up of all patients is recommended.

KEY POINTS

- Disseminated cutaneous zoster can occur in healthy individuals, with a predilection for elderly persons, due to age-related physiological decline in cellular immunity.
- It can be a diagnostic challenge during initial presentation, hence the importance of clinical history and close monitoring. This includes a detailed drug history, particularly in Southeast-Asian populations where many consume traditional medication which may contain corticosteroids or other immunosuppressants.
- Disseminated cutaneous zoster in immunocompetent but elderly patients warrants prompt identification and commencement of therapy, to reduce risk of further complications such as encephalitis and other visceral involvement.
- Upon confirming the diagnosis, patients should be screened for other underlying causes of immunosuppression such as infections and malignancy.
- Close review of all patients is recommended, to monitor for debilitating complications, preventing further morbidity and mortality.

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