



Disseminated herpes zoster involving bladder and severe inappropriate antidiuretic hormone in a immunocompetent elderly patient - A case report -

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Disseminated herpes zoster commonly occurs in patients with decreased immunity, but rarely in patients without any evidence of immunosuppression. We reported a case of disseminated herpes zoster with visceral organ involvement in a non-immunocompromised patient. An 83-year-old man visited our pain center, with chief complaints of painful rashes on the L3-L4 and S2-S4 due to acute herpes zoster. Even though intravenous antiviral therapy was initiated immediately upon hospitalization, his lesion deteriorated and systemic cluster formed. Urinary retention and hyponatremia occurred, and he was diagnosed with zoster cystitis and severe inappropriate antidiuretic hormone syndrome. Conservative treatment, including Foley catheter insertion and correction of hyponatremia with antiviral therapy, was initiated, and he was discharged without any complications at the 33rd day of hospitalization. Old age can be a risk factor of disseminated herpes zoster, and visceral organ involvement should also be considered.

Key Words: Cystitis, Herpes zoster, Hyponatremia, Immunocompetence, Inappropriate ADH Syndrome, Urinary retention.

Herpes zoster is a viral infection caused by the reactivation of the latent varicella-zoster virus (VZV) in the dorsal root ganglion. It is characterized by unilateral painful vesicles in the affected sensory ganglion [1]. Pain is the most common complaint in patients with herpes zoster, leading to decreased quality of life and economic burden [2,3].

The clinical variants of herpes zoster are gangrenous, bullous, hemorrhagic, and disseminated [4]. Disseminated herpes zoster is defined as the presence of > 20 lesions outside the affected dermatome and commonly occurs in immunocompromised patients, especially those with HIV infections, hematologic malignancies, and undergoing chemotherapy [5]. Clinical signs and symptoms of disseminated herpes zoster vary, aside from the painful rashes, depending on the

involved organs, which require conservative managements as well as antiviral therapy. Several reports existed on disseminated herpes zoster in immunocompromised patients [6-9]. However, reports of patients without any evidence of immunosuppression have been limited.

In this case report, we investigated a non-immunocompromised patient with disseminated herpes zoster, who had urinary retention and severe inappropriate antidiuretic hormone (SIADH) during hospitalization. He was treated using conservative management including antiviral therapy, and was discharged without any complications.

CASE REPORT

An 83-year-old man visited our pain center complaining of stabbing pain, itching sensation, grouped erythematous vesicle, and crusts on the left buttock, medial thigh, and knee, which started approximately 2 weeks ago. One week after the initial onset of pain, he was diagnosed with acute herpes zoster infection at the local dermatology clinic. He was treated with oral antiviral agents for 4 days, and the symptoms significantly improved. However, he stopped taking the medications, which resulted in the recurrence of pain and worsening of the skin lesions after 1 week. Upon his first consultation, his pain level on the L3–L5 and S2–S4 dermatomes was 5/10 based on the numeric rating scale score. He had no medical history related to immunocompromised conditions but he had essential hypertension and benign prostatic hypertrophy. Routine blood tests on his first visit were as follows: the C-reactive protein was 1.42 mg/dl, erythrocyte sedimentation rate was 27 mm/h, serum Na was 132 mEq/dl, and others were within normal ranges. Initial viral markers such as the immunoglobulin G (IgG) and IgM were positive and VZV polymerase chain reaction was negative. His leukocyte counts were within normal ranges, and objective findings including blood test results showed no evidence of immunocompromised condition. IV antiviral therapy and oral medication with gabapentin and analgesics were started upon hospitalization. On the 4th day, he complained of urinary frequency with swelling in the left leg and erythematous rashes on his scrotum and penis (Fig. 1), and so, treatment with IV

antibiotics was started to prevent soft tissue infection as advised by the dermatologist. On the 5th day, he complained of the abdominal distension, and crusts were observed on his neck and trunk (Fig. 2); therefore, we consulted a urologist and the division of infectious diseases. He was then diagnosed with disseminated herpes zoster infection with urinary retention involving the bladder, and urethral catheterization was performed. A nephrologist was also consulted for the laboratory findings such as Na of 121 mEq/L and osmolality of 255 mOsm/kg, who diagnosed him with SIADH; therefore, water restriction was ordered. On the 6th day, the edema of the left leg, scrotum, and penis was reduced. At this time, his pain was intractable even after the administration of medications such as gabapentin 300 mg, duloxetine 30 mg, tramadol 75 mg, acetaminophen 650 mg, and Celebrex 400 mg per day. Other interventions such as neuraxial block cannot be performed because of his medical condition; therefore, oxycodone 40 mg/day was administered as a pain reliever. On the 7th day, the SIADH was resolved. On the 20th day, the Foley catheter was removed following a bladder filling test. He was discharged on the 33rd day of hospitalization without any complications. He came back to the pain center three times after discharge with the pain score reduced to 2. He continued taking medications such as pregabalin 450 mg, nortriptyline 10 mg, tramadol 75 mg, acetaminophen 650 mg, and oxycodone 20 mg per day to relieve the remaining pain. On his last visit, he requested to receive a prescription from a local clinic near his home.



Fig. 1. The left leg swelling and erythematous scrotum and penis of the patient observed on the 4th day of hospitalization.



Fig. 2. Crusts on the left neck area of the patient observed on the 5th day of hospitalization.

DISCUSSION

Disseminated herpes zoster is a rare variant of herpes zoster, which is associated with diffused rashes, encephalitis, hepatitis, and pneumonitis. It is most commonly observed in immunocompromised patients, such as those with HIV infections, hematologic malignancies, undergoing chemotherapy. The reactivation of VZV has been known to be associated with the decrease of VZV-specific T-cell immunity and the decrease of the number and activity of T lymphocytes, which are vulnerable to viral transmission [5]. Even though our patient is not immunocompromised, he is an elderly person, which is a risk factor associated with decreased T-cell immunity. The key clinical features of disseminated herpes zoster are necrotic, discrete, and hemorrhagic dermatomal lesions [9]. At first, he showed typical clinical features of acute herpes zoster even though the skin lesions were relatively widespread, but not enough to suspect the dissemination. Moreover, IV antiviral therapy was started at the first day of visit and hospitalization. He had no medical history related to immunocompromised conditions, and the routine blood test showed no leukopenia; however, the disease still progressed rapidly.

Voiding dysfunction related to herpes zoster is rare, which only resulted if the S2 and S3 are involved. Three zoster-associated bladder dysfunction syndromes have been identified: zoster cystitis, zoster retention, and zoster myelitis. Zoster cystitis is the mildest form of the disease with a triad of dysuria, urinary frequency, and hematuria, which correlate with virus transmission along the autonomic nerves to the bladder, causing local erythema, edema, and vesicle formation. Zoster retention usually presents with acute symptoms accompanied by severe constipation and is closely associated with sacral reactivation (50%–78%). The unilateral infection spreads from the dorsal root ganglion to the sacral motor neurons, roots, or peripheral nerves, causing an interruption of the bilateral detrusor reflex, resulting in an atonic bladder. It is likely to persist for 4–6 weeks. The duration of voiding dysfunction in zoster retention is independently associated with the severity of rashes. Our patient's symptom lasted for 3 weeks, and he fully recovered afterward. Zoster myelitis is a rare kind of zoster-associated bladder dysfunction and presents with a spastic bladder with overflow incontinence secondary to a virally induced transverse myelitis involving

the ascending tracts. In case of zoster retention, the symptomatic management, such as antiviral medication and urethral catheterization, is recommended in the acute phase. If the treatment of zoster retention fails even after 6–8 weeks from the onset, urodynamic investigations should be considered to rule out the true neurogenic cause [10]. Some reports revealed that SIADH is related to disseminated herpes zoster [11–13]. The mechanism of SIADH in herpes zoster is unclear but it is hypothesized that the stimulation of peripheral nerves with herpetic involvement can lead to increased plasma concentration of antidiuretic hormone (ADH). Other reports postulated that herpetic involvement of the right-sided chest wall may lead to posterior pituitary ADH secretion via the hypothalamic stimulation because the sensory nerve osmolar receptors in the liver were stimulated [14]. Zoster retention could lead to death if the diagnosis and treatment were delayed [12]. Lumbar puncture was not performed because the patient had no neurological symptoms; therefore, whether there was a CNS involvement caused by the herpes zoster cannot be confirmed.

Disseminated herpes zoster is a serious medical condition, but with has a prognosis. Gomez and Chernev [15] reported that most of the immunocompetent elderly patients who suffered from disseminated cutaneous herpes zoster recovered without sequelae in their review of cases. However, a small number of patients developed segmental paresis, such as post-herpetic neuralgia [15]. In this case, the patient experienced a post-herpetic neuralgia, and his severe medical condition where the herpes zoster was disseminated to the visceral organ, which made the action of interventions such as nerve block for pain control difficult, is believed to be a major factor for this prognosis.

This is a case report of a disseminated herpes zoster involving the visceral organ with SIADH in a non-immunocompromised patient. We believed that old age can be a risk factor of dissemination. When visceral organs were involved in herpes zoster, atypical signs and symptoms can be found and could be fatal. Early diagnosis and appropriate treatment are essential. Therefore, careful observation of the patient's signs and symptoms is essential to diagnose the disseminated herpes zoster in elderly individuals.

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