Disseminated Zoster Involving the Whole Body in an Immunocompetent Patient Complaining of Left Leg Radiating Pain and Weakness: A Case Report and Literature Review

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Abstract

Introduction: Disseminated herpes zoster is defined as at least 20 skin lesions in multiple dermatomes. In particular, it has been reported mainly in patients with immunological defects. To our knowledge, there is no reported case of disseminated zoster in a non-immunocompromised patient with leg radiating pain and weakness. Case presentation: A 74-year-old man visited our hospital with left leg radiating pain and left hip pain. He had no underlying disease other than hypertension. Neurologic examination revealed radiating pain on the L4 dermatome of the left leg. The muscle power was grade 3 for the hip flexor and knee extensor, and grade 4 for the ankle dorsiflexor and big toe dorsiflexor of the left leg. There were no sensory changes or skin lesions on his left leg. Herniation of the nucleus pulposus of the lumbar spine was suspected and lumbar magnetic resonance imaging (MRI) was performed. However, no pathologic lesions were seen on lumbar MRI. On the third day of hospitalization, erythematous patches and vesicles were observed on the head, face, ear, neck, trunk, back, and both lower extremities. Herpes zoster infection was confirmed by polymerase chain reaction analysis. Treatment was performed with 250 mg of intravenous acyclovir every 8 hours for 6 days and 62.5 mg of intravenous methylprednisolone for 4 days. On the 13th day of hospitalization, the skin lesions and left leg radiating pain and weakness improved. Conclusion: We report the first case of disseminated herpes zoster involving the whole body in a non-immunocompromised patient complaining of left leg radiating pain and weakness. After treatment, both the patient's radiating pain and weakness improved.

Keywords
disseminated zoster, immunocompetent patient, radiating pain, weakness, case report

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Introduction

Herpes zoster is a common infection caused by the reactivation of the dormant varicella-zoster virus in the posterior dorsal root ganglion. The risk is increased in older and immunocompromised patients. Typical skin lesions occur over 50% of the chest, face, cervical, and...
Complications include post-herpetic neuralgia (10%), ocular complications (4%), and motor neuropathies (3%). These complications mainly occur in people with weakened immune systems. Herpes zoster usually occurs unilaterally within the distribution of a single cranial or spinal sensory nerve. Disseminated herpes zoster is defined as at least 20 skin lesions in multiple dermatomes. In particular, it has been reported mainly in patients with immunological impairments, such as human immunodeficiency virus infection, cancer, chemotherapy, immunological disorders, and bone marrow transplant recipients. To our knowledge, there is no reported case of disseminated zoster with leg radiating pain and weakness. Here, we report the first case of disseminated herpes zoster involving the whole body in a non-immunocompromised patient complaining of left leg radiating pain and weakness.

Case Presentation

A 74-year-old man visited the emergency department with left leg radiating pain and left hip pain that occurred 3 days earlier. He had no underlying diseases other than hypertension. The neurologic examination revealed radiating pain on the L4 dermatome of the left leg. The muscle power was grade 3 for the hip flexor and knee extensor, and grade 4 for the ankle dorsiflexor and big toe dorsiflexor of the left leg. There were no sensory changes or skin lesions on his left leg. Plain radiography of the lumbar spine showed intervertebral disc space narrowing at the L4-5 and L5-S1 levels. Plain radiography of the hip revealed no specific findings. The patient was admitted for pain control.

Herniation of the nucleus pulposus (HNP) of the lumbar spine was suspected and lumbar magnetic resonance imaging (MRI) was performed. However, there were no pathologic lesions on the lumbar MRI (Figure 1). A computed tomography (CT) scan of the lower extremity artery was performed to differentiate the symptoms from those of vascular problems, but there were no pathologic lesions. The initial laboratory examinations showed no specific findings. After admission, 25 mg of pethidine mixed with 500 mL of normal saline was administered intravenously to control pain, but the pain did not improve.

On the third day of hospitalization, erythematous patches and vesicles were observed on the head, face, ear, neck, trunk, back, and both lower extremities (Figure 2). A skin biopsy was performed for the vesiculopustular rash under the suspicion of disseminated herpes zoster. Herpes zoster infection was confirmed by polymerase chain reaction analysis. Treatment was performed with 250 mg of intravenous acyclovir every 8 hours for 6 days and 62.5 mg of intravenous methylprednisolone for 4 days. On the sixth day of admission, all of the lesions were covered with crust but the neuropathic pain persisted and gabapentin was prescribed for 6 days. On the 13th day of hospitalization, the skin lesions and left leg pain and weakness improved and he was discharged from the hospital. This study was approved by our Institutional Review Board in accordance with the Declaration of Helsinki.
Table 1. Disseminated Zoster in Immunocompetent Patient Reported in the Literature.

| Author and year          | Age | Sex | Underlying disease                  | Initial symptoms                               | Skin lesion location                          | Treatment          |
|--------------------------|-----|-----|-------------------------------------|------------------------------------------------|-----------------------------------------------|--------------------|
| Moriuchi et al. (1997)   | 37  | M   | None                                | Upper back vesicles and pain                    | Upper back, trunk, and extremities            | IV acyclovir       |
| Gupta et al. (2005)      | 69  | M   | None                                | Forehead pain and vesicles                      | Chest, back, and upper and lower extremities  | IV acyclovir       |
| Beby-Defaux et al. (2009)| 28  | M   | None                                | Abdominal and lower back pain                   | Trunk and shoulder                            | IV acyclovir       |
| Kangath et al. (2013)    | 30  | F   | None                                | Headache and neck pain                          | Lower extremities                             | IV acyclovir       |
| Sun et al. (2013)        | 43  | M   | Chickenpox                          | Right trunk vesicles                            | Head, face, trunk, and extremities           | IV acyclovir       |
| Yoon et al. (2013)       | 75  | M   | Diabetes mellitus Angina            | External auricle vesicles and pain              | Scalp, posterior neck, shoulder, upper arm, upper back | Oral acyclovir     |
| Takaoaka et al. (2013)   | 61  | M   | None                                | Right chest and back vesicles and pain          | Right chest, back, left arm, abdomen          | Oral valacyclovir  |
| Kashyap et al. (2013)    | 6   | M   | None                                | Vesicles and crusting                           | Left side of upper face and scalp, shoulder, trunk | Oral acyclovir     |
| Oladokun et al. (2013)   | 8   | M   | None                                | Headache and face vesicles                      | Face, chest, back, and upper and lower limbs | Oral acyclovir     |
| Goyal et al. (2013)      | 27  | M   | None                                | Headache and neck pain                          | Upper back and left arm                       | IV acyclovir       |
| Gomez et al. (2014)      | 95  | F   | Coronary artery disease Chronic obstructive pulmonary disease | Lower lip and face vesicles and pain | Face, oral mucosa, trunk, and upper and lower extremities | IV acyclovir       |
| Petrun et al. (2015)     | 74  | M   | Congestive heart failure Chronic obstructive pulmonary disease | Fever, headache, and fatigue | Face, scalp, trunk, and extremities | IV acyclovir       |
| Scotch et al. (2016)     | 53  | F   | None                                | Pruritic rash                                   | Chest, face, abdomen, back, and arms         | IV acyclovir       |
| Uchida et al. (2017)     | 88  | M   | Coronary artery disease Dizziness right face, arm, leg, and chest vesicles | Dizziness right face, arm, leg, and chest vesicles | Chest, extremities, face, and neck | IV acyclovir       |
| Rudinsky et al. (2017)   | 37  | F   | None                                | Neck erythematous rash                          | Head, neck, trunk, and extremities           | IV acyclovir       |
| Lim et al. (2018)        | 64  | M   | Intracranial arteriovenous malformation Seizure | Intracranial arteriovenous malformation | Trunk, back, and upper limbs | IV acyclovir       |
| Drone et al. (2019)      | 67  | F   | Hypertension Diabetes mellitus      | Painful left trunk rash                          | Left abdomen and back, face, and chest       | IV acyclovir       |
| Chakraborty et al. (2020)| 60  | M   | None                                | Right upper limb vesicles and pain              | Trunk, back, face, and right upper extremities | IV acyclovir       |
| Chiriac et al. (2020)    | 67  | M   | Arterial hypertension Erythematous rash | Arterial hypertension | Erythematous rash | Trunk, face, and right inferior limb | Oral acyclovir     |
| Oh et al. (2020)         | 86  | M   | Chickenpox                         | Confusion and right face swelling               | Right face, trunk, and extremities           | IV acyclovir       |
| Sohal et al. (2020)      | 40  | M   | Hypertension Migraine               | Headache                                         | Right thigh and gluteal region               | IV acyclovir       |
| Matsuo et al. (2022)     | 78  | F   | None                                | Lower abdominal pain                            | Head, chest, abdomen, and back               | IV acyclovir       |

F, female; M, male; IV, intravenous.
Discussion

Disseminated cutaneous zoster rarely occurs in immunocompetent patients (2%), but it occurs in 15 – 30% of immunocompromised patients. In our case, the patient was a healthy patient with only hypertension as an underlying disease, and systemic zoster developed even though he was not immunosuppressed. Our patient had high blood pressure, and the only risk factor for developing zoster was an older age of 74 years. The median age of the reported immunocompetent disseminated herpes zoster patients was 65.4 years. When herpes zoster infection occurs, old age is one of the risk factors for complications such as zoster paresis, postherpetic neuralgia, and electrophysiological alterations in motor and sensory fibers. Therefore, even if there is no specific underlying disease in immunocompetent patients, it should be known that older age patients may develop disseminated zoster.

To date, a total of 22 immunocompetent patients have been reported to develop disseminated zoster. Most of the patients with disseminated zoster complained of headache, skin vesicle, dizziness, and pain in the face, trunk, and upper extremity as initial symptoms (Table 1). However, no patients complained of leg pain and weakness as initial symptoms, as in the patient in our case. In our case, we initially suspected lumbar HNP because the patient complained of radiating pain and weakness in the left leg. Generally, the symptoms of zoster are pain in the affected nerve root area first, followed by the development of vesicles in the skin segment dominated by the infected nerve root. Therefore, it is difficult to diagnose herpes zoster when the patient complains only of radiating pain and weakness without skin lesions. Once the patient complains of radiating pain in the lower extremities, spinal problems should be evaluated. However, if there is no spinal disease, the possibility of zoster should be considered even if there are no skin lesions.

Conclusion

We report the first case of disseminated herpes zoster involving the whole body in a non-immunocompromised patient complaining of left leg radiating pain and weakness. After treatment, both the patient’s radiating pain and weakness improved gradually.

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Declaration of Conflicting Interests

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Ethics Approval

All consent procedures and details were approved by the Institutional Review Board of our institution (approval number: PC22ZESI0106).

Consent for Publication

Written informed consent was obtained from the patient for publication of this case report and any accompanying images. A copy of the written consent is available for review by the Editor of this journal.

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References

1. Schmader K. Herpes zoster. Ann Intern Med. 2018;169(3): ITC19-ITC31. doi:10.7326/aitc201808070
2. Yawn BP, Saddier P, Wollan PC, St Sauver JL, Kurland MJ, Sy LS. A population-based study of the incidence and complication rates of herpes zoster before zoster vaccine introduction. Mayo Clin Proc. 2007;82(11):1341-1349. doi:10.4065/82.11.1341
3. Chiriac A, Chiriac AE, Podoleanu C, Stolnicu S. Disseminated cutaneous herpes zoster-A frequently misdiagnosed entity. Int Wound J. 2020;17(4):1089-1091. doi:10.1111/iwj.13370
4. Drone E, Ganti L. A case of disseminated zoster in an immunocompetent patient. Cureus. 2019;11(12):e6286. doi:10.7759/cureus.6286
5. Kim JB, Jung HJ, Lee JM, Im KS, Joo CH, Kim JW. Disseminated herpes zoster with a zoster paresis-induced femoral fracture. Geriatr Gerontol Int. 2012;12(1):168-171. doi:10.1111/j.1447-0594.2011.00739.x
6. Gupta S, Jain A, Gardiner C, Tyring SK. A rare case of disseminated cutaneous zoster in an immunocompetent patient. BMC Fam Pract. 2005;6:50. doi:10.1186/1471-2296-6-50
7. O’Toole EA, Mooney EE, Walsh JB, Sweeney EC, Barnes L. Disseminated herpes zoster in the elderly. Ir J Med Sci. 1997;166(3):141-142. doi:10.1007/bf02943592
8. Venkatesh SK, Lo LL. CT appearance of Varicella Zoster lesions in liver and spleen in an immunocompetent patient. J Clin Virol. 2006;36(4):303-305. doi:10.1016/j.jcv.2006.04.006
9. Moriuchi H, Moriuchi M, Sun CC, Trucksis M. Disseminated cutaneous zoster and aseptic meningitis in a previously healthy patient. J Infect. 1997;35(2):183-185. doi:10.1016/s0163-4453(97)91842-9
10. Beby-Defaux A, Brabant S, Chatellier D, et al. Disseminated varicella with multiorgan failure in an immunocompetent adult. *J Med Virol.* 2009;81(4):747-749. doi:10.1002/jmv.21447

11. Goyal H, Thakkar N, Bagheri F, Srivastava S. Herpes zoster meningitis with multidermatomal rash in an immunocompetent patient. *Am J Emerg Med.* 2013;31(11):1622.e1-2. doi:10.1016/j.ajem.2013.06.021

12. Kangath RV, Lindeman TE, Brust K. Herpes zoster as a cause of viral meningitis in immunocompetent patients. *BMJ Case Rep.* 2013;2013:bcr2012007575. doi:10.1136/bcr-2012-007575

13. Oladokun RE, Olomukoro CN, Owa AB. Disseminated herpes zoster ophthalmicus in an immunocompetent 8-year old boy. *Clin Pract.* 2013;3(2):e16. doi:10.4081/cp.2013.e16

14. Sun ZH, Guo YY, Li M, Yao ZR. Disseminated herpes zoster in immunocompetent patients not due to varicella-zoster virus gene mutation. *Chin Med J (Engl).* 2013;126(16):3193.

15. Takaoka Y, Miyachi Y, Yoshikawa Y, Tanioka M, Fujisawa A, Endo Y. Bilateral disseminated herpes zoster in an immunocompetent host. *Dermatol Online J.* 2013;19(2):13.

16. Yoon KJ, Kim SH, Lee EH, Choi JH. Disseminated herpes zoster in an immunocompetent elderly patient. *Korean J Pain.* 2013;26(2):195-198. doi:10.3344/kjp.2013.26.2.195

17. Gomez E, Chernev I. Disseminated cutaneous herpes zoster in an immunocompetent elderly patient. *Infect Dis Rep.* 2014;6(3):5513. doi:10.4081/idr.2014.5513

18. Kashyap S, Shanker V. Zoster ophthalmicus with dissemination in a six year old immunocompetent child. *Indian J Dermatol Venereol Leprol.* 2014;80(4):382. doi:10.4103/0378-6323.136997

19. Petrun B, Williams V, Brice S. Disseminated varicella-zoster virus in an immunocompetent adult. *Dermatol Online J.* 2015;21(3):13030/qt3czx99b.

20. Scotch AH, Hoss E, Orenstein R, Budavari AI. Disseminated varicella-zoster virus after vaccination in an immunocompetent patient. *J Am Osteopath Assoc.* 2016;116(6):402-405. doi:10.7556/jaoa.2016.082

21. Rudinsky DM, Jordan K. Disseminated herpes zoster causing acute respiratory distress syndrome in an immunocompetent patient. *BMJ Case Rep.* 2017;2017:bcr2017220542. doi:10.1136/bcr-2017-220542

22. Uchida K, Teske N, Christensen J. Disseminated zoster after trauma in an immunocompetent patient. *Am J Med.* 2017;130(12):e539-e540. doi:10.1016/j.amjmed.2017.06.021

23. Lim ZV, Tey H. Disseminated herpes simplex virus and varicella zoster virus co-infection in an immunocompetent patient. *Indian J Dermatol Venereol Leprol.* 2018;84(2):212-214. doi:10.4103/ijdvl.IJDVL_423_17

24. Chakraborty U, Chandra A, Sil A, Biswas SK. Elderly immunocompetent man presenting with disseminated cutaneous herpes zoster. *BMJ Case Rep.* 2020;13(8):e237480. doi:10.1136/bcr-2020-237480

25. Oh JH, Tummala S, Husnain MG. Disseminated herpes zoster with acute encephalitis in an immunocompetent elderly man. *BMJ Case Rep.* 2020;13(6):e232928. doi:10.1136/bcr-2019-232928

26. Sohal RJ, Sohal S, George T, Gilotra T. Varicella-zoster meningitis with hypoglycorrhachia in an immunocompetent patient presenting with disseminated varicella-zoster infection. *Cureus.* 2020;12(6):e8539. doi:10.7759/cureus.8539

27. Matsuo Y, Igarashi Y, Aoyama N, et al. Visceral disseminated varicella-zoster virus infection in an immunocompetent host. *Clin J Gastroenterol.* 2022;15(3):568-574. doi:10.1007/s12328-022-01607-7