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

Young-Seok Moon, MD[1], Wan-Jae Cho, MD[2], Youn-Sung Jung, MD[1], and Jun-Seok Lee, MD, PhD[1]

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 re-activation of the dormant varicella-zoster virus in the posterior dorsal root ganglion.[1] The risk is increased in older and immunocompromised patients.[1] Typical skin lesions occur over 50% of the chest, face, cervical, and

[1]Department of Orthopedic Surgery, Eunpyeong St. Mary's Hospital, College of Medicine, The Catholic University of Korea, Seoul, Republic of Korea
[2]Department of Orthopedic surgery, Yeouido St. Mary's Hospital, College of Medicine, The Catholic University of Korea, Seoul, Republic of Korea

Corresponding Author:
Jun-Seok Lee, MD, PhD, Department of Orthopedic Surgery, Eunpyeong St. Mary's Hospital, College of Medicine, the Catholic University of Korea, 1021, Tongil-Ro, Eunpyeong-gu, Seoul, 03312, Republic of Korea.
Email: junband@naver.com

lumbar-sacral regions.[2] Complications include postherpetic neuralgia (10%), ocular complications (4%), and motor neuropathies (3%).[2] These complications mainly occur in people with weakened immune systems.[2]

Herpes zoster usually occurs unilaterally within the distribution of a single cranial or spinal sensory nerve.[3] Disseminated herpes zoster is defined as at least 20 skin lesions in multiple dermatomes.[3] 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.[1] 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.

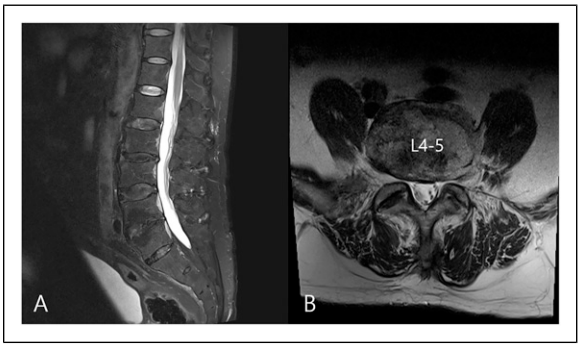

Figure 1. Magnetic resonance imaging (MRI) of the lumbar spine. (A) Sagittal T2-weighted MRI showing no abnormal lesions. (B) Axial T2-weighted MRI showing no abnormal lesions.

Figure 2. Erythematous patches and vesicles on the patient. (A) Face and trunk, (B) back and buttocks, and (C) lower extremities.

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)[9]	37	M	None	Upper back vesicles headache, and nausea	Upper back, trunk, and extremities	IV acyclovir
Gupta et al. (2005)[6]	69	M	None	Forehead pain and vesicles	Chest, back, and upper and lower extremities	IV acyclovir
Beby-Defaux et al. (2009)[10]	28	M	None	Abdominal and lower back pain	Trunk and shoulder	IV acyclovir
Kangath et al. (2013)[12]	30	F	None	Headache and neck pain	Lower extremities	IV acyclovir
Sun et al. (2013)[14]	43	M	Chickenpox	Right trunk vesicles	Head, face, trunk, and extremities	
Yoon et al. (2013)[16]	75	M	Diabetes mellitus Angina	External auricle vesicles and pain	Scalp, posterior neck, shoulder, upper arm, upper back	IV acyclovir
Takaoka et al. (2013)[15]	61	M	None	Right chest and back vesicles, and pain	Right chest, back, left arm, abdomen	Oral valacyclovir
Kashyap et al. (2013)[18]	6	M	None	Vesicles and crusting	Left side of upper face and scalp, shoulder, trunk	Oral acyclovir
Oladokun et al. (2013)[13]	8	M	None	Headache and face vesicles	Face, chest, back, and upper and lower limbs	Oral acyclovir
Goyal et al. (2013)[11]	27	M	None	Headache and neck pain	Upper back and left arm	IV acyclovir
Gomez et al. (2014)[17]	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)[19]	74	M	Congestive heart failure Chronic obstructive pulmonary disease Chronic renal disease	Fever, headache, and fatigue	Face, scalp,trunk, and extremities	IV acyclovir
Scotch et al. (2016)[20]	53	F	None	Pruritic rash	Chest, face, abdomen, back, and arms	IV acyclovir
Uchida et al. (2017)[22]	88	M	Coronary artery disease	Dizziness right face, arm, leg, and chest vesicles	Chest, extremities, face, and neck	IV acyclovir
Rudinsky et al. (2017)[21]	37	F	None	Neck erythematous rash	Head, neck, trunk, and extremities	IV acyclovir
Lim et al. (2018)[23]	64	M	Intracranial arteriovenous malformation	Seizure	Trunk, back, and upper limbs	IV acyclovir
Drone et al. (2019)[4]	67	F	Hypertnsion Diabetes mellitus	Painful left trunk rash	Left abdomen and back, face, and chest	IV acyclovir
Chakraborty et al. (2020)[24]	60	M	None	Right upper limb vesicles and pain	Trunk, back, face, and right upper extremities	IV acyclovir
Chiriac et al. (2020)[3]	67	M	Arterial hypertension	Erythematous rash	Trunk, face, and right inferior limb	Oral acyclovir
Oh et al. (2020)[25]	86	M	Chickenpox	Confusion and right face swelling	Right face, trunk, and extremities	IV acyclovir
Sohal et al. (2020)[26]	40	M	Hypertension Migraine	Headache	Right thigh and gluteal region	
Matsuo et al. (2022)[27]	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.[4] 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.[5] 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.[6-8] 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.[3,4,6,9-27] 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.[1] 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.

ORCID iD

Jun-Seok Lee https://orcid.org/0000-0003-4321-9611

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