



Herpes-Zoster-Mediated Radiculitis After Thoracic Spine Surgery

Hyo Sae Ahn^a
Doo Hyuk Kwon^b

^aSpine Center and
Department of Orthopaedic Surgery,
Pohang Semyeng Christianity Hospital,
Pohang, Korea

^bDepartment of Neurology,
Yeungnam University College of Medicine,
Daegu, Korea

Dear Editor,

Varicella zoster virus (VZV) primarily infects children and reactivates in adulthood, causing herpes zoster (also called shingles). Herpes zoster induces pain along the skin dermatome that is accompanied by characteristic band-shaped blisters. Known risk factors include infection with human immunodeficiency virus, bone marrow transplantation, leukemia, lymphoma, receiving immunosuppressors including chemotherapy or steroids, various autoimmune diseases, old age, trauma, female sex, asthma, diabetes, and chronic obstructive pulmonary disease.^{1,2} In cases of spinal diseases, VZV can be reactivated after interventions including injection therapy or various surgical treatments, including spinal surgery.³⁻⁵ However, herpes zoster is quite rare in clinical neurology.

A 53-year-old male patient visited the emergency room with a chief complaint of weakness in both legs that started 3 days prior without any history of trauma. He had liver cirrhosis. On neurological examination, the strength of both lower limbs was Medical Research Council scale grade 1, and there was no sensation at all. On thoracolumbar spine magnetic resonance imaging revealed right T1–T2 paracentral disc herniation with cord compression and cord signal change (Fig. 1A and B). The patient was diagnosed with thoracic myelopathy. The following surgical treatment was performed immediately: T1 total laminectomy, C7 and T2 dome laminoplasty, T1–T2 discectomy, and T1–T2 postfusion with a pedicle screw (Fig. 1C and D).

After surgical treatment, the muscle strength and sensation in the lower limbs gradually improved. However, 10 days after the operation, the patient complained of a stinging sensation on the right chest wall and upper arm associated with vesicular skin rashes (Fig. 1E and F) that had developed along the right T1 dermatome, which were compatible with herpes zoster viral infection. Valacyclovir (1 g) was administered orally three times a day for 7 days, and the stinging symptoms and skin rash subsequently improved.

In this case, herpes zoster occurred in the related segment (T1 dermatome) after surgical treatment for thoracic myelopathy caused by right T1–T2 paracentral disc herniation. The exact mechanism of VZV reactivation remains unknown. Reactivation of the VZV under reduced virus-specific cell-mediated immune responses induces widespread cell-to-cell proliferation, strong local inflammatory responses, and widespread necrosis of neuroglial cells and neurons within the ganglion. VZV spreads down the sensory nerve and is then released from the nerve endings in the skin, causing a cutaneous dermatomal rash.⁶ Although it is unclear how local surgical trauma can reactivate VZV in the ganglion,^{6,7} we hypothesized that the reactivation was due to a decline in VZV-specific cell-mediated immunity and disruption of cutaneous immunity caused by stimulating the sensory nerve. General anesthesia and surgery-related stress can reduce virus-specific cell-mediated immune responses.^{1,6,7} Direct pressure on the ganglion by root manipulation during surgery stimulates sensory nerves, which can disrupt local cutaneous immunity.^{1,8} The timing of symptoms after the inciting event varies,

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Correspondence

Doo Hyuk Kwon, MD
Department of Neurology,
Yeungnam University
College of Medicine,
170 Hyeonchung-ro, Nam-gu,
Daegu 42415, Korea
Tel +82-53-620-3680
Fax +82-53-627-1688
E-mail kspy1d@gmail.com

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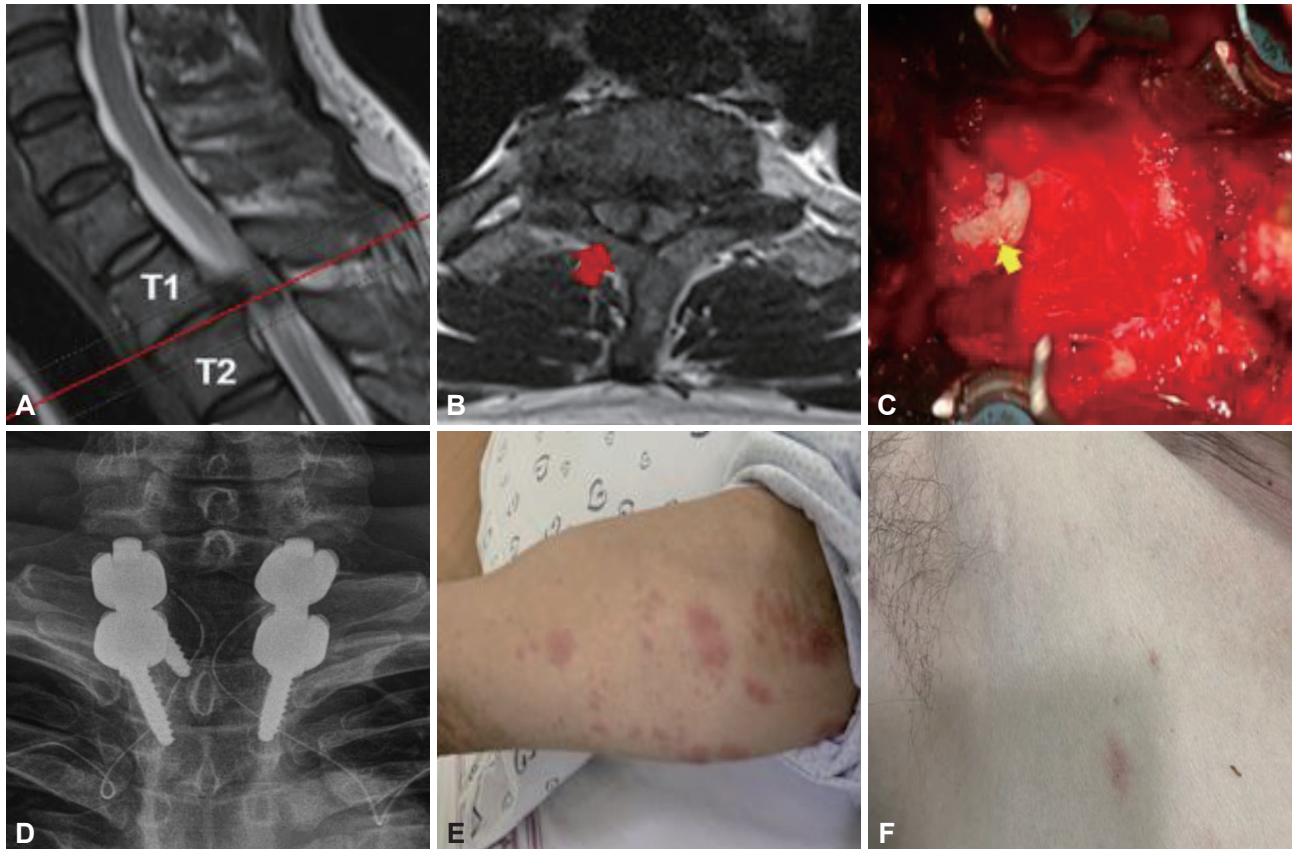


Fig. 1. T2-weighted sagittal (A, red line) and axial (B, red arrow) magnetic resonance imaging shows T1–T2 paracentral disc herniation with cord compression and cord signal change. Operation field shows a herniated disc (C, yellow arrow). X-ray shows T1–T2 instrumented posterolateral fusion (D). Vesicular rashes were present in the right medial upper arm (E) and right anterior chest wall (F) along the right T1 dermatome.

but mostly the virus is reported to occur at 2–15 days after surgery.^{4–6} Most authors have administered acyclovir or valacyclovir, which usually leads to rapid resolution of the rash, but the effect on neuralgia or neurologic deficits is more variable.^{3–7}

The early diagnosis of herpes zoster is not difficult if the skin lesions appear within a short period (generally within 14 days) after the sensory symptoms, as in the present case. However, there are cases without characteristic skin lesions, such as herpes zoster sine herpette.² Grauvogel and Vougioukas⁷ reported a case of prolonged pain in the cervical distribution without rash after C7–C8 foraminotomy. The presence of herpes zoster sine herpette was confirmed by PCR analysis, with amplifiable VZV DNA found in the cerebrospinal fluid and mononuclear blood cells. In particular, if herpes zoster sine herpette occurs after spinal surgery, neurologists should give appropriate advice to the department of spine surgery to prevent irreversible damage caused by treatment delay.

Ethics Statement

Written informed consent was obtained from the patient for publication of this research.

Availability of Data and Material

All data generated or analyzed during the study are included in this published article.

ORCID iDs

Hyo Sae Ahn
Doo Hyuk Kwon

<https://orcid.org/0000-0003-0436-391X>
<https://orcid.org/0000-0001-7541-9226>

Author Contributions

Conceptualization: Hyo Sae Ahn, Doo Hyuk Kwon. Data curation: Hyo Sae Ahn, Doo Hyuk Kwon. Formal analysis: Hyo Sae Ahn, Doo Hyuk Kwon. Investigation: Hyo Sae Ahn, Doo Hyuk Kwon. Methodology: Hyo Sae Ahn, Doo Hyuk Kwon. Writing—original draft: Hyo Sae Ahn. Writing—review & editing: Doo Hyuk Kwon.

Conflicts of Interest

The authors have no potential conflicts of interest to disclose.

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