Herpes Zoster Virus: An Unusual but Potentially Treatable Cause of Sciatica and Foot Drop

WALTER B. SPRENGER DE ROVER, MRCS; SULAIMAN ALAZZAWI, MRCS; PETER J. HALLAM, MS, FRCS(TR&ORTH); RACHAEL HUTCHINSON, MD, FRCS(TR&ORTH); LIVIO DI MASCIO, FRCS(TR&ORTH)

abstract

The herpes zoster virus is a rare but potential cause of acute motor weakness. This article describes 2 patients with drop foot secondary to an infection of varicella zoster who were incorrectly referred to an orthopedic clinic from their general practitioners. The first patient was a 74-year-old man who presented with weakness in the right foot and a vesicular rash. The pattern of disease supported the clinical diagnosis of shingles affecting the L5 motor and sensory division. No investigation was required, and the patient was treated with a foot drop splint. The second patient was a 71-year-old man who presented with right leg and foot weakness and a vesicular rash affecting his right buttock and posterior right thigh. Lumbar magnetic resonance excluded a stenotic lesion; electrophysiological studies supported the diagnosis of a lower motor neuron lesion. The patient was treated with a 1-week course of acyclovir and a foot drop splint. The correct diagnosis will aid in correct referral and will prompt management, which will potentially provide a faster and better outcome for the patient.

Figure: Photograph of the lateral aspect of the right lower leg showing the resolving scabbing lesion.

Mr Sprenger De Rover is from the Nottingham University Hospitals NHS Trust, Nottingham, Mr Alazzawi is from the University College London Hospitals, London, Mr Hallam and Dr Hutchinson are from the Norfolk and Norwich University Hospital, Norwich, and Mr Di Mascio is from The Royal London Hospital, London, United Kingdom.

Messrs Sprenger De Rover, Alazzawi, Hallam, and Di Mascio and Dr Hutchinson have no relevant financial relationships to disclose.

Correspondence should be addressed to Sulaiman Alazzawi, MRCS, University College London Hospitals, 235 Easton Rd, London, NW1 2BU United Kingdom (salazzawi2@gmail.com).

doi: 10.3928/01477447-20111021-26
Herpes zoster virus, or shingles as it is commonly known, is a viral disease stemming from a childhood infection of chicken pox. Zoster, originating from the Greek word meaning “costume,” occurs when the virus, which has become latent in the dorsal root ganglia, becomes active. This results in a painful vesicular rash in the corresponding dermatome, which resolves in a matter of weeks. As immunity fluctuates, the virus can be reactivated numerous times later in life.\(^1,2\)

Normally, shingles affects the sensory system only, but there are occasions when motor paralysis is described. The facial nerve, vestibulocochlear nerve, and optic nerve are more commonly involved.\(^3\) Rarely, a peripheral motor nerve of an extremity may be involved, creating significant weakness.\(^4,5\)

This article describes 2 patients who were incorrectly referred to an orthopedic clinic from general practitioners with a diagnosis of drop foot. Both patients had motor weakness secondary to a herpes zoster infection.

**Case Reports**

**Patient 1**

A 74-year-old man presented with weakness in the right foot and difficulty walking. Other than mild ischemic heart disease, he was healthy. He lived at home with his wife, was a nonsmoker, and was active (eg, walked the dog 2 or 3 miles per day). He described pain in the lateral aspect of the leg followed by the appearance of a vesicular rash in a similar distribution that occurred 1 week previously. He stated that the rash has remained since it first appeared, although the weakness was gradually improving as the rash was settling.

On examination, he had some residual findings of a shingles rash in the L5 distribution (Figure 1). He walked with a steppage gait, and neurological assessment revealed profound weakness in tibialis anterior and peroneii on the right lower leg (Medical Research Council [MRC] grade 2/5). Ankle jerk reflex was present bilaterally. The pattern of disease supported the diagnosis of shingles affecting the L5 motor and sensory division. The diagnosis was based on the clinical examination, and no investigation was required. The patient was provided with a foot drop splint, and a follow-up neurological assessment was arranged. Three months after examination, the patient’s symptoms had resolved completely, leaving him with no residual sensory or motor function loss. No further management was required, and the patient was discharged from neurological care.

**Patient 2**

A 71-year-old man presented with right leg and foot weakness and difficulty walking. He described pain in his right lower leg radiating from his right buttock down the posterior aspect of his thigh that began 3 weeks previously. One week preceding the onset of pain, the patient experienced progressive numbness to the right foot and lateral aspect of the right thigh. He described the appearance of a vesicular rash affecting his right buttock and posterior right thigh (Figure 2A).

Physical examination revealed a scabbing rash consistent with shingles over the right buttock and thigh (Figure 2B). He walked with a steppage gait and neurological assessments revealed motor weakness in L4 and L5 myotome (MRC grade 2/5). The right ankle reflex was diminished, and altered skin sensation was described over the dorsum of right foot. No nerve root tension signs were present, and all hematological infective markers were normal.

Lumbar magnetic resonance imaging (MRI) excluded a stenotic lesion; electrophysiological studies supported a lower motor neuron lesion affecting the sciatic nerve proximal to the sciatic notch with reduced interference pattern in tibialis anterior, gastrocnemius, and semimembranosus and unrecordable distal lower limb sensory response. The patient was prescribed a 1-week course of 800 mg of acyclovir taken 5 times per day and received physical therapy and a foot drop splint. Three months after presentation, the patient had recovered completely with no residual motor or sensory function loss.

**Discussion**

Motor paralysis caused by herpes zoster is rare. The facial nerve, vestibulocochlear nerve, and optic nerve are more commonly involved. Rarely, a peripheral motor nerve of an extremity may be involved, creating significant weakness.\(^6,7\)

Often, the characteristic rash will involve the spinal segment corresponding with the motor weakness, but this is by no means constant.\(^3\) The motor weakness can even affect the contralateral side of the rash, but this is more unusual.\(^3\) Our second patient had the characteristic rash involved the right S1 dermatome; however, the motor palsy predominantly affected the right L4 and L5 myotomes. This variability in anatomical distribution has been noted previously. Although both cases we described involved the lower limb, other authors have noted that the upper limb can be involved frequently.\(^1\)
Herpes zoster infection contributes to a reemergence of a previous infection of varicella zoster that caused chicken pox. The initial infection causes a characteristic disease and is usually self-limiting, affecting children. For reasons that are not clear, some virus particles remain inactive within the dorsal root ganglia of the spinal cord.2

The reemergence of the virus often occurs for unknown reasons. However, the reemergence may be prompted by an immunosuppressed state (eg, diabetes mellitus, renal failure, malignancy, steroids, chemotherapy, or human immunodeficiency virus). Grant and Rowe8 followed 101 patients over a 10-year period. The patients were admitted to the hospital with the diagnosis of herpes zoster or the diagnosis was made while the patients were being treated for another condition. The authors found an 11% incidence of concurrent malignant neoplasms in the patients they examined.9 For this reason, physicians try to identify a causal relationship.

Diagnosis is often clinical. The appearance of the varicella zoster rash should guide the clinician in most instances.2,9 In some cases, varicella zoster rash can be confused with that of herpes simplex virus, impetigo, scabies, folliculitis, contact dermatitis, urticaria, or drug eruption. Laboratory diagnostic tests can be used to confirm the diagnosis.9

If the disease causes motor weakness, particularly in the lower limb, other pathologies may be the cause. In both of the cases described, the patients were referred by their primary care physicians to the acute orthopedic service for evaluation and treatment of what was thought to be acute lumbar disk prolapse.

Often, no other investigations are required after clinical assessment; however, electromyography and MRI studies may be helpful, particularly as in patient 2, where the anatomical distribution of the rash did not completely match the distribution of motor weakness.10 Magnetic resonance imaging can be used to exclude nerve root compression; it may show contrast enhancement of the anterior roots of affected segments.1 Electromyography studies usually disclose reduced sensory nerve action potentials and compound muscle action potentials in the affected segments.1 Other authors have also suggested that tests for antibodies and viral DNA in cerebrospinal fluid may be helpful.9,11

The incidence of motor weakness following varicella zoster infection varies. Kawajiri et al1 reported that anti-virals may prevent the occurrence of zoster paresis but that there was not enough evidence to show whether it speeds recovery. Evidence suggests that the use of acyclovir speeds up resolution of skin lesions and neuralgia in patients with herpes zoster, as well as prevention in immunocompromized patients.12,13 The recommended oral dose is 800 mg of acyclovir taken 5 times daily for 1 week.14 No evidence exists that valacyclovir is more efficacious than acyclovir.12

Recurrence of herpes zoster can occur in up to 6.2% of patients within the first 8 years after the first episode of shingles, with a higher risk for immunocompromized patients.15 Herpes zoster vaccine might help to reduce the recurrence especially in those at high risk.16 Varicella zoster infection should be thought of as a potential cause of acute motor weakness. Although rare, there is an easily identifiable associated rash, and prompt instigation of antiviral treatment may improve outcome and minimize unnecessary investigations. The correct diagnosis will aid in correct referral and prompt management and could provide both a faster and better outcome for the patient.

REFERENCES
7. Tilki HE, Mutluer N, Selcuki D, Stalberg...
Case Report


