BMJ Case Reports

Reminder of important clinical lesson

Motor radiculopathy

Afsha Khan, Jeremy Camilleri

Department of Rheumatology, University Hospital of Wales, Cardiff, UK

Correspondence to Dr Afsha Khan, afshak@gmail.com

Summary

A 48-year-old immunosuppressed woman presented to a rheumatology follow-up clinic after suffering from herpes zoster infection. She had manifestations of foot drop 3 months after the initial infection. She was diagnosed with motor radiculopathy following herpes zoster infection that was effectively managed by physiotherapy and amitriptyline.

BACKGROUND

I think this case is important because radiculopathy is a rare complication of herpes zoster that can occur with immunosuppression. Also I wanted to highlight the use of steroid therapy in its treatment which has proved to improve the symptoms as evident by case reports.

CASE PRESENTATION

We present a case of a 48-year-old lady known to the rheumatologists since 2000, with a diagnosis of rheumatoid arthritis/systemic lupus erythematosis overlap. Patient had treatment with multiple immunosuppressants' over a period of time (prednisolone, azathioprine, hydroxychloroquine and methotrexate) all discontinued due to side effects. She then responded to mycophenolate mofetil and remained well for 3 years.

In 2011, the patient stopped mycophenolate following an outbreak of a red vesicular rash on the lateral aspect of her left lower leg and dorsum of the left foot, involving the L5 and S1 dermatomes. She was treated for herpes zoster infection with aciclovir. Three weeks after she was reviewed in rheumatology clinic when she had pain and numbness around the distribution of the rash. On examination she had multiple scarred lesions over the area involved. She had reduced movements in the ankle joint. Ankle and plantar reflexes were reduced on the affected side. Sensation was significantly reduced on the affected side in the dermatomal distribution of L5/S1. Nerve conduction study and electromyography findings were compatible with a herpes zoster motor radiculopathy.

TREATMENT

She started amitriptyline therapy and was referred to the physiotherapists and orthotic department.

OUTCOME AND FOLLOW-UP

She was reviewed 3 months later in clinic with healing scars and minimal improvement in neurology. Patient is still under treatment and regular follow-up.

DISCUSSION

Varicella-zoster virus, a member of the herpes virus family, is a neurotropic virus that primarily affects afferent sensory neurons. Although herpes infection with motor nerve involvement may be infrequently encountered, it is not rare and has been reported as early as 1949.[1] Unless the immune system is compromised, it suppresses reactivation of the virus and prevents herpes zoster. Why this suppression sometimes fails is poorly understood but herpes zoster is more likely to occur in people whose immune system is impaired due to ageing, therapy, psychological or other factors.[2] Reactivation of latent virus within the dorsal root ganglion and axoplasmic transport to epithelial nerve terminals causes the segmental cutaneous rash and neuralgic pain characteristic of herpes zoster. It is unclear as to why motor paresis may occur; however, it is postulated that the virus spreads proximally as well as distally, causes a local neuritis in the spinal nerve and subsequently gains access to the motor axons.[3]

Traditionally it has been reported that only 1–5% of patients develop motor neuron involvement.[4] Recently however, it has been reported that 5–30% with typical cutaneous lesions develop some form of motor weakness affecting the myotomal muscles corresponding to the dermatomal distribution of skin lesions. Three-quarters of those with zoster paresis are more than 50-year-old. These patients and immunocompromised individuals are at increased risks for severe complications, involving the eye, the peripheral and the central nervous system. The weakness usually develops within 2–3 weeks of skin eruptions but varies from an hour to a month.[4] The prognosis of herpes zoster-related paresis is good, with more than half the patients showing good recovery, and one-third developing significant improvement within 6–12 months.[5]

The learning point from this case report would be to suspect herpes zoster radiculopathy when immunosuppressed patients present with motor weakness following a cutaneous herpes zoster infection. Second, to be considered is whether the use of steroids would help in the recovery phase. On the basis of the findings of herpes simplex virus reactivation within the geniculate ganglion patients with idiopathic facial nerve palsy have been treated with antiviral agents with better outcomes than patients not treated with antivirals.[6 7] In patients with herpes zoster radiculopathy the incidence of zoster paresis and the progression and severity of electrophysiological

changes have been found to decrease in patients with antiviral therapy.[8 9] However, there is limited data on the use of steroids for patients with herpes zoster radiculopathy but case reports are available to suggest marked improvement in symptoms following fluoroscopically guided nerve root block with steroid and local anaesthetic.[10] Presumably, zoster motor paresis is caused by extension of inflammation from the dorsal root ganglion to the spinal nerve or ventral root. Therefore, it can be inferred that installation via epidural/selective nerve root block of a steroid along the spinal root and within the epidural space might result in diminished pain and weakness by decreasing this inflammation.[11] Shakir *et al*[11] reported in 2007 successful treatment of post-herpetic neuralgia with C5 distribution symptomatology with a cervical transforaminal epidural steroid injection. At the time of injection, cellular immunity has already reached its peak because the intervention takes place at least a few days after the onset of the condition. Therefore, an increased risk for the dissemination or spread of the infection because of the immunosuppressive activity of corticosteroids is not expected.[12]

Learning points

- Herpes zoster radiculopathy should be suspected when immunosuppressed patients present with motor weakness following a cutaneous herpes zoster infection.
- The use of steroids would help in the recovery phase as evident by case reports.

Competing interests None.

Patient consent Obtained.

REFERENCES

1. **Halpern S,** Covner A. Motor manifestations of herpes zoster. *Arch Intern Med* 1949;**84**:907–16.
2. **Thomas SL,** Hall AJ. What does epidemiology tell us about risk factors for herpes zoster? *Lancet Infect Dis* 2004;**1**:26–33.
3. **Dumitru D.** Generalized peripheral neuropathies. In Dumitru D**.** *Electrodiagnostic medicine*. Philadelphia: Hanley and Belfus Inc., 1995:803–4.
4. **Gupta SK,** Helal BH, Kiely P. The prognosis in zoster paralysis. *J Bone Joint Surg (Br)* 1969;**51**:593–603.
5. **Thomas JE,** Howard FM. Segmental zoster paresis: a disease profile. *Neurology* 1972;**22**:4594–666.
6. **Adour KK,** Rubovianes JM, von Doersten PG, *et al*. Bell's palsy treatment with acyclovir and prednisone compared with prednisone alone: a double blind, randomized, controlled trial. *Ann Otol Rhinol Laryngol* 1996;**10**:371–8.
7. **Hato N,** Matsumoto S, Kisaki H, *et al*. Efficacy of early treatment of Bell's palsy with oral acyclovir and prednisolone. *Otol Neurotol* 2003;**24**:948–51.
8. **Mondelli M,** Romano C, Passero S, *et al*. Effects of acicyclovir on sensory axonal neuropathy,segmental motor paresis and postherpetic neuralgia in herpes zoster patients. *Eur Neurol* 1996;**36**:288–92.
9. **Haampa M,** Hakkinen V, Nurmikko T. Motor involvement in acute herpes zoster. *Muscle Nerve* 1997;**20**:1433–8.
10. **Conliffe T,** Dholakia M, Broyer Z. Herpes zoster radiculopathy treated with flouroscopically-guided selective nerve root injection. *Pain Physician* 2009;**12**:851–3.
11. **Shakir A,** Kimbrough DA, Mehta B. Postherpetic neuralgia involving the right C5 dermatone treated with a cervical transforaminal epidural steroid injection. A case report. *Arch Phys Med Rehab* 2007;**88**:255–8.
12. **von Wijck AJ,** Wallace M, Mekhail N, *et al*. Evidence-based interventional pain medicine according to clinical diagnoses: herpes zoster and post herpetic neuralgia. *Pain Pract* 2011;**11**:88–97.