The importance of early diagnosis of herpes zoster myelitis

Olivia LW Ong, Andrew C Churchyard and Peter W New

Clinical record

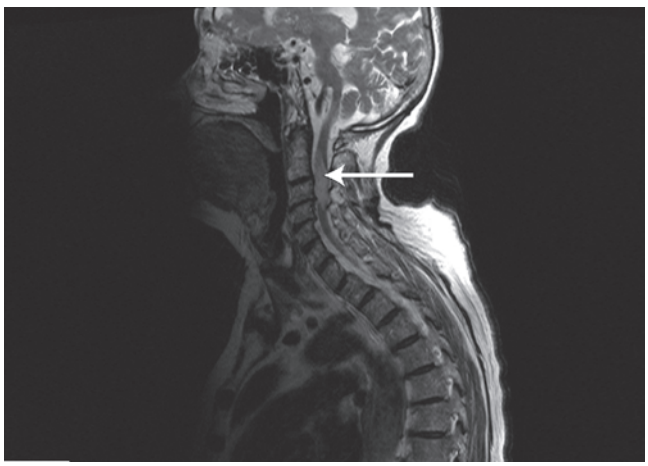
A 78-year-old woman who was previously very active and in good health presented to hospital feeling unwell and with an extensive rash, involving both upper limbs (C3–T1 dermatomes), consistent with herpes zoster. Three weeks later, extensive diffuse left upper limb neuropathic pain developed over her C5–C7 dermatomes. The following week, her condition worsened to include progressive severe paresis of the left upper limb; weakness in the right hand; bilateral lower limb weakness; patchy areas of paraesthesia affecting many areas of the upper limbs, trunk and proximal lower limbs; severe constipation; and urinary retention, which required insertion of an indwelling catheter. She was bedbound and needed assistance with all self-care activities.

About 10 days after the onset of weakness, a neurologist diagnosed a cervical myelopathy and recommended magnetic resonance imaging of the spine. This revealed an area of inflammation at C2–C4 involving the full thickness of the spinal cord at that level, consistent with transverse myelitis (Figure). She was diagnosed with herpes zoster myelitis.

About 6 weeks after her initial presentation, the patient was transferred to another acute hospital for further assessment. Detailed examination revealed asymmetric tetraparesis; upper limbs (left greater than right) were affected more than the lower limbs. On manual muscle testing she had muscle strength in her limbs as follows: 0/5 in the proximal and 1/5 in the distal left upper extremity, 4/5 in the right upper extremity and 2/5 in both lower limbs, with partial loss of sensation from her C4 to L3 dermatomes.

Laboratory findings for full blood cell count, urea and electrolytes were unremarkable except for mild hyponatraemia and mild derangement of liver enzymes. Because of the severity of the herpes zoster infection, the patient was tested for underlying immunocompromise. She was found to have a κ monoclonal gammopathy of undetermined significance (12.0 g/L IgG; reference range [RR], 7.0–16.0 g/L) and borderline low values of immunoglobulins IgA (0.40 g/L; RR, 0.7–4.0 g/L) and IgM (0.31 g/L; RR, 0.4–3.0 g/L). It was thought that all of these immune abnormalities were of questionable significance.

Treatment was initiated with intravenous methylprednisolone (1 g/day for 6 days) and intravenous (300 mg three times a day for 6 days) then oral (800 mg five times a day for 2 weeks) aciclovir. During the course of this treatment, gradual improvement in power of all four limbs became evident. She was subsequently admitted to a spinal rehabilitation unit and discharged 8 weeks later with evidence of ongoing neurological and functional improvement. Her hospital stay was complicated by severe postherpetic neuralgia, which was eventually controlled with gabapentin (400 mg three times a day). She recovered bladder function but needed aperients to achieve controlled faecal continence.



Sagittal T2-weighted magnetic resonance image with gadolinium enhancement showing an ovoid hyperintense lesion in the upper cervical spinal cord (arrow).

At discharge, neurological examination revealed persisting asymmetric tetraparesis. She had 4/5 upper extremity muscle strength in C7–T1 myotomes on the left, 4/5 in L2 and L3 myotomes in both lower limbs and her remaining myotomes were of normal power. She was able to walk with a four-wheel frame or a single-point stick for 10–20 m and was independent for many activities of daily living.

At follow-up 9 months after her initial presentation, her condition was still improving gradually. She had weaned off the gabapentin with no residual postherpetic neuralgia. She was able to walk short distances unaided and had regained full independence with most of her self-care using aids. ◆

Herpes zoster is associated with several neurological complications, including postherpetic neuralgia, aseptic meningitis, meningoencephalitis, transverse myelitis, peripheral nerve palsies, cranial nerve palsies and granulomatous cerebral angiitis.[1] These complications are particularly prevalent among older people and patients with immunodeficiency. A causative relationship with herpes zoster in many of these syndromes is probably more common than suspected owing to difficulties in diagnosis and lack of awareness among clinicians. However, to our knowledge, there are no published reports of any known association between the neurological complications of herpes zoster, including myelitis, and postherpetic neuralgia.

Transverse myelitis is a focal inflammatory disorder of the spinal cord. It results in sensory, motor and autonomic dysfunction [2] Onset may be acute, developing over a few hours or several days, or subacute, developing over 1 to 2 weeks. The critical factor is an abnormal immune response to infection, rather than the direct effect of an infectious agent.[3] Transverse myelitis may be an isolated entity or may occur with a background of viral diseases, vaccinations, systemic lupus erythematosus, vasculitis, multiple sclerosis, heroin misuse or trauma.[3] About 25%–40% of cases of transverse myelitis are caused by viral infections with herpes viruses or poliovirus.[2] A recent publication provides useful additional information about transverse myelitis.[4]

Transverse myelitis following herpes zoster or herpes zoster myelitis (HZM) is rare, and typically occurs in hosts who are immunocompromised. Its onset is usually acute, occurring shortly after the appearance of the rash, with the development of sensory, motor and autonomic dysfunction.[5] No diagnostic test is completely accurate, as the virus cannot usually be isolated from blood or cerebrospinal fluid in HZM.[5] In most cases, diagnosis of

Lessons from practice

- Herpes zoster myelitis is rare in the context of normal immunity; it is more common among patients with immunocompromise.
- Clinicians should be aware of the close temporal relationship between skin rash and the onset of myelitis so that appropriate investigations and treatment can be instigated.
- Magnetic resonance imaging of the spine should be performed to aid diagnosis.
- Although early treatment of herpes zoster myelitis is preferable, delayed treatment may also be worthwhile. ◆

HZM is clinical and based on detection of typical vesicular lesions in dermatomal distribution in association with clinical features of transverse myelitis. Suggested treatment involves high doses of corticosteroids and aciclovir.[5] The prognosis ranges from spontaneous recovery to ascending neurological progression and death.[6]

The frequency of transverse myelitis during or after varicella infection is reported to be 0.3%.[7] Devinsky and colleagues analysed their findings in 13 immunocompromised patients with HZM.[8] The pathogenesis of HZM is unclear, but it may be due to direct viral invasion, which was demonstrated in one autopsy case.[9]

Diagnosing HZM can be challenging. The importance of a careful clinical assessment to establish the likelihood of this diagnosis and the level of the spinal cord damage, in combination with confirmatory magnetic resonance imaging (MRI)[7]cannot be overstated. MRI not only provides information about the site but also the extent of spinal cord involvement, and excludes other possible diagnoses. In our patient, HZM was diagnosed based on the temporal relationship of myelopathy to the rash and MRI findings. Although the area of the spinal cord that was involved on the MRI scan was less extensive than that affected by the herpetic rash, we do not see this as clinically inconsistent.

There are no proven treatment regimens for HZM, but there is anecdotal evidence for treatment of HZM with high doses of aciclovir and corticosteroids.[5,10] It appears that antiviral treatment was not provided early to our patient because it was not initially recognised that the rash was due to herpes zoster. Once HZM was diagnosed, this treatment was provided. Despite the delay of 3 weeks following the onset of rash, improvement appeared consistent with a clinical response to this therapy. Although early treatment of herpes zoster with antivirals is crucial to prevent the development of postherpetic neuralgia, there is little evidence that such treatment reduces the risk of HZM.

To date, no evidence has emerged regarding the protective efficacy of the new live, attenuated herpes zoster vaccine (Zostavax) against HZM. Trials assessing the impact of antivirals or the herpes zoster vaccine on risk of HZM would require very large numbers of participants, given the rarity of this complication. Nevertheless, the vaccine has proven to be efficacious in reducing the incidence of and morbidity associated with herpes zoster and postherpetic neuralgia in older adults.[11] It has been noted in a previous case report that, following the diagnosis of HZM, even delayed treatment with oral antivirals may prevent neurological progression.[12] Our case provides support for this assertion.

Competing interests

None identified.

Author details

Olivia LW Ong, MB BS, BMedSci, Rehabilitation Registrar[1]
Andrew C Churchyard, PhD, MB BS, FRACP, Neurologist[2,3]
Peter W New, MB BS, MClinEpi, FAFRM(RACP), Head,[1] Physician (Rehabilitation Medicine),[2] and Principal Researcher[4]

1 Spinal Rehabilitation Unit, Caulfield Hospital, Alfred Health, Melbourne, VIC.
2 Cabrini Hospital, Melbourne, VIC.
3 Monash Medical Centre, Southern Health, Melbourne, VIC.
4 Epworth-Monash Rehabilitation Medicine Unit, Melbourne, VIC.

Correspondence: p.new@cgmc.org.au

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