Herpes zoster reactivation isolated to the ulnar and posterior antebrachial cutaneous nerves – case report and literature review

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Abstract

Varicella-zoster virus (VZV) is a neurotropic virus which causes two distinct syndromes: primary infection presenting as varicella, mainly occurring in children without previous exposure to VZV, and reactivation of the latent VZV in the dorsal root ganglia, causing herpes zoster in adults. Herpes zoster clinically presents as a unilateral, painful, vesicular eruption, usually distributed to one or two adjacent thoracic dermatomes. As it is rarely seen confined to the upper limbs, few reports of herpes zoster involving the ulnar nerve exist in the literature, the majority describing patients who present with segmental zoster paresis of the upper extremity. This paper reports the case of a 73-year-old woman with ulnar and posterior antebrachial cutaneous nerve zoster reactivation and no history of immunosuppressive disorders. Therefore, rare occurrences of herpes zoster, such as the involvement of cervical dermatomes, should also be considered when faced with the differential diagnosis of symptomatic skin rashes of the upper limb, especially in elderly or immunosuppressed patients.

Introduction

Varicella-zoster virus (VZV), a double-stranded DNA neurotropic virus belonging to the herpes virus family, causes two distinct syndromes: primary infection presenting as varicella, mainly occurring in children without previous exposure to VZV (1), and reactivation of the latent virus in the dorsal root ganglia, causing herpes zoster in adults (2), usually older than 60 years (3, 4), whose immune system fails to contain viral replication (5, 6). It is still not completely clear if other factors such as physical trauma, radiation, other infections, certain drugs, and stress have the potential to trigger herpes zoster (6).

The prodrome preceding the characteristic skin rash of herpes zoster consists of pruritus, tenderness, burning, or atypical pain in the area of one or two adjacent dermatomes, and may occur for days or weeks in advance (7). The prodromal period is followed by the appearance of papules or plaques, which quickly turn into vesicles or bullae on a red background, disseminated over the affected nerve dermatome. Herpes zoster can be seen in any dermatome, but most commonly occurs in the thoracic region (8).
There are few reports of ulnar nerve zoster reactivation in the literature (9-11), and most patients present with segmental zoster paresis of the upper extremity (12-15). In a study on herpes zoster infection involving the hand and upper extremity, Kim et al. found that three out of the five enrolled patients had ulnar nerve involvement, another one had radial nerve involvement, and in one case the medial antebrachial cutaneous nerve was involved. It was also noted that one patient only exhibited dysesthesia along the ulnar nerve distribution in the hand and forearm (11).

In this paper we report a case of ulnar and posterior antebrachial cutaneous nerve herpes zoster reactivation.

Case report

A 73-year-old woman presented to the Department of Dermatology of the “MEDAS” Medical Center in Bucharest with a history of burning and stubbing sensations and intermittent shooting pain along the ulnar and dorsal aspect to her right forearm, wrist, and hand. After five days of pain, she noticed a cutaneous vesicular eruption on a red background in the same areas. It was only after another seven days that she presented for consultation, during which she administered over-the-counter non-steroidal anti-inflammatory drugs (NSAIDs) on a daily basis. She reported no history of trauma. Her past medical history was positive for arterial hypertension and dyslipidemia. She confirmed having had varicella as a child, but could not remember experiencing herpes zoster previously. The patient had no known drug allergies.

Clinical examination revealed clusters of round and polygonal post-vesicular lesions covered by hematogenous crusts on a red background, in the ulnar nerve and posterior antebrachial cutaneous nerve distributions (Figure 1. A-D). Decreased light-touch sensation was also noted in the same distributions. Movement of the wrist, fourth and fifth finger was not painful, and the range of motion and muscle strength was normal. Her upper limb presented no visible deformity. Tinel’s and Froment’s signs were both negative. The patient did not give consent for an ENMG examination.

The patient’s presentation and clinical course were consistent with the diagnosis of herpes zoster. Due to late presentation, at 12 days after the onset of prodromal phase, and the presence of few risk factors, antivirals were not prescribed. The patient made an uneventful recovery within three weeks of initial presentation and was asymptomatic at two months follow-up, showing no residual pain, paraesthesia, weakness or scarring.

Discussion

Herpes zoster clinically presents with a unilateral, painful, vesicular eruption usually distributed
to one or two adjacent thoracic dermatomes (8) or cranial nerves. As it is rarely seen confined to the upper limbs, few reports of herpes zoster involving the ulnar nerve exist in the literature (Table 1), and even fewer with radial or median nerve distribution (9-12, 16, 17). This paper reports the case of a 73-year-old woman presenting with ulnar and posterior antebrachial cutaneous nerve zoster re-activation.

Following primary VZV infection, the virus lies dormant in the dorsal root ganglia and is probably frequently reactivated, but clinical disease is prevented through competent cell-mediated immunity (4). Decreased cell-mediated immunity in elderly or immunosuppressed (neoplastic disease, organ-transplant recipients, immunosuppressive drugs, HIV infection) patients greatly increases the risk of developing herpes zoster (4, 5, 18).

No potentially immunosuppressive diseases could be identified in our patient’s medical history. Herpes zoster should be considered in the differential diagnosis of patients presenting with various cutaneous eruptions, psoriasis, acute eczema, or inflammatory verrucous epidermal nevus. The disease is mainly diagnosed clinically due to the characteristic vesicular and erythematous maculo-papular lesions with dermatomal distribution. However, rare presentations of herpes zoster, such as the involvement of cervical dermatomes, should also be considered when faced with the differential diagnosis of symptomatic skin rashes of the upper limbs, especially in elderly or immunosuppressed patients.

Even though, in most patients, confirming the diagnosis through laboratory testing has no utility, diagnostic studies for VZV include: tissue culture, polymerase chain reaction (PCR) or direct fluorescent antibody (DFA) testing of vesicular fluid or a corneal lesion, and Tzanck smear of vesicular fluid. While magnetic resonance imaging may reveal abnormalities of the affected nerves (12), a skin biopsy is rarely necessary.

Electroneuromyography (ENMG) can help with the differential diagnosis of entrapment syndrome or radiculopathies, and may reveal variable electrophysiological findings in zoster-associated mononeuropathies (12, 19, 20).

However, our patient did not give consent for an ENMG exploration. Nevertheless, the appearance of the typical rash after a prodromal stage dominated by burning and itching in a dermatomal distribution simplified the clinical diagnosis in this case.

Even though the prognosis of herpes zoster is generally good, postherpetic neuralgia is a commonly occurring complication. Postherpetic neuralgia is characterized by pain or dysesthesia persisting for one month after the resolution of the cutaneous rash (7). Nevertheless, in some cases, the pain can persist for months or even years (7, 21). Other complications include neuritis causing cranial and peripheral nerve palsies, myelitis, acute retinal necrosis, and encephalitis.

There are reports of upper-limb herpes zoster patients presenting with concomitant paresis or paralysis (12, 14). Notwithstanding motor involvement in herpes zoster can be diagnosed by ENMG, subclinical motor involvement is most likely under-recognized and underdiagnosed.

No motor involvement could be found during the clinical examination of the current patient.

Shortening of the clinical course, providing analgesia, preventing complications, and reducing the incidence of postherpetic neuralgia are the main therapeutic goals for herpes zoster. In the ideal scenario, antiviral therapy should be started within 72 hours of symptom onset, but can be considered regardless of the time passed until presentation (29). Acyclovir, valacyclovir, brivudine, and fomciclovir are antivirals routinely prescribed in

<table>
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Table 1. Reported cases of herpes zoster involving the ulnar nerve
the treatment of herpes zoster infection. Antivirals are proven to accelerate lesion healing and help decrease the severity and duration of acute pain (1, 7, 18). The concomitant use of systemic corticosteroids in herpes zoster therapy is common practice, several authors recommending it (1, 30), while in only one study cutaneous dissemination of the virus occurred in the setting of both antiviral and corticosteroid treatment (30). In most cases, patients require analgesics, or in some cases even opioids, to control neuralgic pain.

Due to late presentation, moderate symptomatic, and the presence of few risk factors, no antiviral treatment was prescribed in this case. The patient made a full recovery within three weeks of initial presentation.

**Conclusion**

Any nerve in the human body can be affected by herpes zoster, failure of cell-mediated immunity possibly resulting from inappropriate nutrition, overwork, and emotional stress and not necessarily a serious underlying condition. Upper limb involvement is uncommon and, in the prodromal phase, may be confused with entrapment neuropathies, while the eruption phase can mimic various skin eruptions. There are few reports in the literature describing pure cutaneous herpes zoster reactivation affecting the upper limb, the current paper reporting an ulnar and posterior cutaneous nerve of the forearm zoster reactivation. The diagnosis of herpes zoster is typically made on clinical findings, although electrophysiological studies may provide helpful information in atypical cases.

**Conflicts of interest:** none declared.  
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**Patient informed consent obtained.**

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**Bibliography**