

# Herpes Zoster Induced Shoulder Paresis: Case Report

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## Abstract

While neuropathic pain is commonly seen after herpes zoster infection, zoster-induced paresis is a rare complication. In the literature, there are only a few case reports of segmental motor paresis (SMP) with muscle weakness that has developed after herpes zoster infection. Postherpetic neuralgia is a chronic pain syndrome that can last for years and is often treatment-resistant, can lead to physical and social disabilities and psychological disorders. This case is presented to emphasize extremity weakness—which may rarely develop with neuralgia after herpes zoster—and its treatment.

**Keywords:** Postherpetic neuralgia, atrophy, shoulder pain, physical therapy

## CASE REPORT

A 59-year-old female patient applied to our hospital with complaints of pain, burning and rash on her left shoulder that had started eight weeks ago (Figure 1). Treatment was started with the diagnosis of zoster and the rash regressed with treatment. Afterwards, she was referred to our outpatient clinic with continuing complaints of motion limitation, burning, and weakness in the left shoulder. In the physical examination of the patient the following findings were reported: bilateral cervical rotations were restricted, left shoulder abduction was 100 degrees, left shoulder flexion was 90 degrees, left shoulder rotations were painful and restricted with an internal rotation of 20 degrees and an external rotation of 25 degrees. Muscle strength of the left upper extremity was 3/5 in the proximal region and normal (5/5) in the distal. Biceps and brachioradial tendon reflexes were decreased. C5–C6 dermatome had dysesthesia. There was a 2 cm atrophy in the right deltoid compared with the left deltoid. In the right upper extremity, magnetic resonance imaging (MRI) revealed acromioclavicular joint hypertrophy, tendinopathy on the supraspinatus and effusions in subacromial,

subdeltoid and subcoracoid bursas. In the cervical MRI, there were severe osteodegenerative changes in the vertebrae and multiple bulging disks and disc degeneration, while an annular rupture at the C5–C6 level with a shallow disc protrusion effacing the ventral subarachnoid space was also observed (Figure 2). However, none of the findings could have caused prominent nerve root compression at any level. There was no abnormality in hemogram, serology and biochemical tests. In electromyography (EMG), sensory conduction examination revealed that the left first finger median nerve response amplitude was lower than the right and rate of conduction was slow, while motor conduction examination revealed prolonged distal latency of the median nerve. In the needle EMG test, active denervation was found at resting state in the deltoid and biceps muscles which are innervated from the upper brachial trunk (n.axillaris and n.musculocutaneous), indicating acute neurogenic involvement.

For neuropathic pain, the patient was given pregabalin 75 mg/day as 1x1 initially, which was increased up to 3x1. An appropriate physical therapy and rehabilitation program was applied to the patient for 1 week: a standard 10-min cold pack

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application, ultrasound (1 w/cm<sup>2</sup>) for 5 min to the left shoulder electric stimulation to the left deltoid muscle for 20 min, and Transcutaneous Electrical Nerve Stimulation (TENS) application to the left shoulder every session. For the range of motion of the joint, a shoulder continuous passive motion (CPM) device was used. The patient's complaints alleviated after stretching, strengthening and range of motion exercises for the shoulders. By the end of treatment, the patient's pain was greatly reduced, her left shoulder abduction was 160 degrees, flexion was 170 degrees, while the internal and external rotations were both up to 30 degrees. The muscle strength in the left upper extremity had increased to 4/5. The patient became independent in daily activities.

## DISCUSSION

Herpetic rash recovers within treatment about 2–4 weeks, but the pain often persists even after the rash has healed. This pain is defined as postherpetic neuralgia (PHN). It is a chronic pain syndrome that can last for years and is often treatment-resistant, can lead to physical and social disabilities and psychological disorders.<sup>1-3</sup> It has been reported that 11%–15% of patients who apply to pain clinics are patients with PHN.<sup>3,4</sup>

The severity of paresis is usually correlated with electrophysiological abnormalities in patients with postherpetic neuralgia. Herpes zoster-related motor paralysis has been reported in 0.5%–5% of cases and is mostly in the form of cranial nerve involvement.<sup>4,5</sup> Segmental paralysis is more common in the neck and upper extremity, while it is rarer in the lower extremity.<sup>4</sup> Typically, paresis develops in the proximal region of the extremities. In the upper extremity, the muscles within the C5–C7 segments are usually affected.<sup>5,6</sup> Although the paresis typically begins in the proximal region, it can progress to the distal area and may also become diffuse. Paresis usually develops 2 weeks after skin lesions are observed. In cases where the patient applies to the physician after the acute painful period ends and skin lesions are unidentifiable, misdiagnoses may occur, especially in association with the

patient's age, possible chronic disorders or medications.<sup>7</sup> In this study, pathological electrophysiological changes of the upper trunk of the left brachial plexus were observed. The goal of treatment in postherpetic paresis is to provide analgesia and prevent motor deficit to protect the patient from outcomes such as motion restriction, joint contractures, muscle atrophy and weakness. Oral or intravenous antiviral therapy given especially in the early period may stop the progression of the disease.<sup>8-10</sup> In this study, antiviral treatment had been given in the early period. In addition to systemic drugs; physical therapy and rehabilitation practices play an important role for treating such patients. The success rate of this combined treatment is very high, especially if the patient is diagnosed early. The prognosis of postherpetic paresis is generally good. More than half of the patients show almost complete recovery; however, the recovery period can take up to 2 years.<sup>7,8</sup>

New anticonvulsants, such as lamotrigine and gabapentin, are believed to stabilize the neuronal membranes through their effects on sodium channel function. Gabapentin has been shown to be an effective and safe option for treatment in PHN. There are side effects such as dizziness and drowsiness. Prophylactic use demonstrates better results than late use due to the prevention of central sensitization.<sup>1,3</sup>



**Figure 1.** Herpetic rash before treatment.



**Figure 2.** MRI findings T2 flair.  
MRI: magnetic resonance imaging.

In addition to pharmacologic treatment, physical therapy is an essential part of treatment which are used to create a therapeutic reaction in the tissue. The physiological effect of cold is reactive vasodilatation after sudden vasoconstriction. It relieves inflammation and is more effective in the acute phase. The analgesic effect of cold may be due to reflex muscle relaxation, cutaneous counter irritant effect, or the slowing of nerve conduction. Cold application reduces muscle tone and reduces muscle spasm.<sup>10,11</sup> TENS application is thought to provide analgesia with the combination of effects such as those associated with the gate-control theory, endogenous opiates, local vasodilatation and acupuncture-like effects.<sup>12</sup> The clinical ultrasonography (US) frequency is 0.8–1. MHz and it is usually performed at a dose of 0.5–2.0 w/cm<sup>2</sup>, in pulsed or continuous form. The pulsed form produces less heat and its action is associated with effects such as cavitation and standing waves. The US is indicated for periarticular and chronic inflammatory pathologies.<sup>10,12</sup>

The findings of this case show that postherpetic neuralgia should be considered a diagnosis in patients with painful shoulder complaints with a history suggestive of herpes zoster; especially in elderly patients with chronic diseases, those who are on multiple medications, and also patients who are immunosuppressed. Considering that the patient may apply for treatment after the skin lesion has passed, which may lead to significant difficulties in diagnosis, we believe that physicians should be aware of the clinical and electromyography findings of such patients and the problems faced in diagnosis. Our aim with the current case report was to address these problems and to draw attention to the fact that severe shoulder pain may be associated with postherpetic neuralgia.

## MAIN POINTS

- Postherpetic neuralgia should be considered a diagnosis in patients with painful shoulder complaints with a history suggestive of herpes zoster and it can be treated with medical and physical therapy.

## ETHICS

**Informed Consent:** There is informed consent of patient for this case report.

**Peer-review:** Externally peer-reviewed.

## Authorship Contributions

Concept: S.K., Design: S.K., Literature Search: D.C., Writing: D.C., Critical Review: S.K., D.C.

## DISCLOSURES

**Conflict of Interest:** The authors declare no conflict of interest.

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