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Transient motor paresis caused by herpes zoster

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Segmental zoster paresis is characterized by focal, asymmetrical motor weakness in the myotome that corresponds to the dermatome of a skin rash. A 73-year-old man and a 76-year-old woman who presented with severe right shoulder pain and weakness were diagnosed with segmental zoster paretic involvement of the upper trunk (C5-C6) of the brachial plexus as a complication of herpes zoster. Magnetic resonance imaging (MRI) showed a large cuff tear in 1 patient and a small cuff tear in the other patient. Despite 2 months of conservative treatment for herpetic neuralgia, the patient with the large rotator cuff tear had persistent shoulder pain, particularly at night, and underwent arthroscopic rotator cuff repair. Conservative treatment was performed for the small rotator cuff tear in the other patient. Both patients showed satisfactory clinical results at the last follow-up. In this study, we present these 2 cases to emphasize that post-herpetic segmental motor paresis should be considered in the differential diagnosis of acute painful motor weakness of the upper extremities, such as brachial neuritis. We report the clinical courses of 2 patients with herpes zoster infection combined with rotator cuff tear.

Case 1

A 73-year-old man presented with right shoulder pain and weakness. Active range of motion was limited to 15° of forward flexion and 20° of abduction, and the biceps reflex was absent. Shoulder flexion power was grade 2 of 5, and abduction was grade 2 of 5. The biceps was grade 3 of 5. The muscles distal to the elbow were spared. The patient had no history of trauma.

Regarding the patient's medical history, he reported pain and tingling in the right shoulder 1 week prior and development of a skin rash 3 days after the tingling and pain. He was diagnosed with herpes zoster infection and underwent brachial plexus block for pain relief. On physical examination, the patient had a skin lesion in the C5-C6 dermatomes of the right shoulder and arm (Fig. 1). Vesicles formed on the posterior neck and right shoulder 4 days later. A nerve conduction study (NCS) and needle electromyography (EMG) were performed 3 weeks after the onset of the herpes zoster eruption, and the patient was diagnosed with brachial plexopathy of the upper trunk (C5-C6). Despite 2 months of conservative treatment for herpetic neuralgia, the shoulder pain persisted, particularly at night. Moreover, muscle atrophy around the shoulder joint was observed.

Plain radiography showed an acromial spur and inferior subluxation of the humeral head. MRI showed a large, full-thickness rotator cuff tear (Fig. 2). Follow-up EMG and NCS performed 2 months after the onset of the herpes zoster infection showed an increased frequency of polyphasic motor unit action potentials in the infraspinatus, deltoid, and biceps brachii muscles and the reappearance of volitional interference activity, indicating reinnervation. The patient had 80° of forward flexion, 70° of abduction, 10° of external rotation, and internal rotation to the fourth lumbar vertebra. We decided to perform arthroscopic surgery because of persistent weakness and increased pain at night.

Because this is a case report, no Institutional Review Board approval was required.

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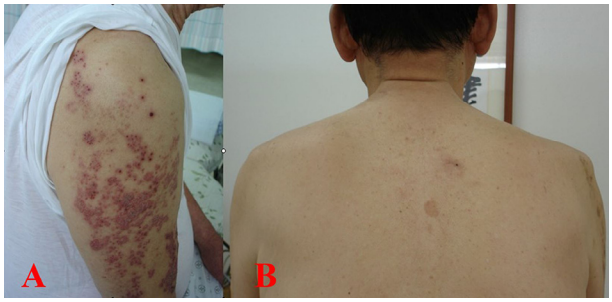

Figure 1 **(A)** Skin lesions developed along the C5 segment of the right shoulder joint. **(B)** Atrophy of the supraspinatus and infraspinatus muscles and subluxation of the right shoulder joint.

Arthroscopic surgery

The glenohumeral joint was evaluated, and the arthroscope was moved to the subacromial space. The supraspinatus tendon showed a large 4 × 3–cm tear (Fig. 3). A tendon-to-tendon repair was performed using No. 2 Ethibond (Ethicon, Somerville, NJ, USA) to repair the torn cuff margin. A Twinfix anchor (Smith & Nephew, Andover, MA, USA) was used for the arthroscopic double-row repair.

Postoperative course

Shoulder pain was almost absent at the final follow-up 3 years later. The American Shoulder and Elbow Surgeons score improved from 15 to 96.5 points, and the University of California, Los Angeles score improved from 6 to 34 points. The patient had 150° of forward flexion, 145° of abduction, 40° of external rotation, and internal rotation to the 12th thoracic vertebra. Muscle strength in the shoulder and elbow had returned to normal.

Case 2

A 76-year-old woman presented with a skin lesion over the C5-C6 dermatome of the right shoulder (Fig. 4). Multiple

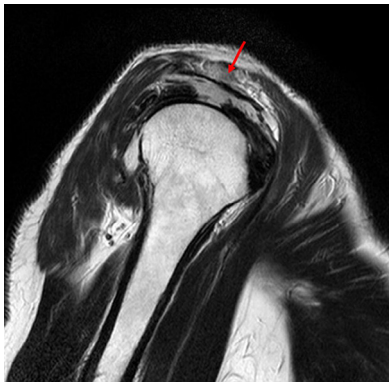

Figure 2 Oblique sagittal magnetic resonance image showing a large, full-thickness tear of the supraspinatus tendon (*arrow*) but intact subscapularis and infraspinatus tendons.

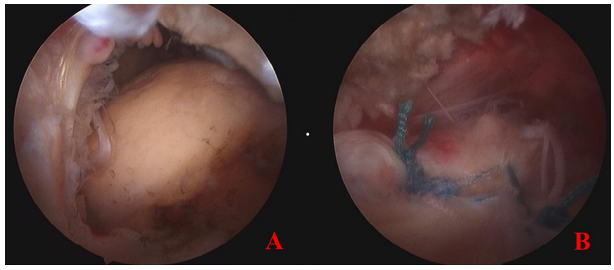

Figure 3 Arthroscopic images showing a large-sized tear of the supraspinatus tendon **(A)** and the repaired tendon **(B)**.

vesicles were observed on the right shoulder and upper arm. She had had a headache in the right temporal area 1 week prior, and 4 days later, vesicles and pain developed on the posterior neck and right shoulder. A herpes zoster infection was diagnosed, and acyclovir was prescribed. She had no history of diabetes mellitus or hypertension. No tenderness was found in the shoulder. The patient had 10° of active flexion, 20° of active abduction, 10° of active external rotation, and internal rotation to the buttocks level. She exhibited motor weakness on shoulder flexion (grade 2 of 5) and abduction (grade 2 of 5). The biceps was checked (grade 3+ of 5). Deep tendon reflexes were diminished in the right biceps. The impingement and drop-arm signs were positive. MRI showed a small (1-cm) full-thickness rotator cuff tear and a type 3 acromion with a spur (Fig. 5). We performed an NCS and needle EMG 3 weeks after the onset of the herpes zoster eruption, and the condition was diagnosed as brachial plexopathy of the upper trunk (C5-C6). We opted for conservative treatment consisting of medications and physiotherapy. The patient's pain improved, so we continued conservative treatment. Strength had improved to grade 3 to 4 at a 2-month follow-up. Pain had improved but was present at the insertion point of the deltoid. Strength had improved to grade 5 at a 6-month follow-up. At 1 year of follow-up, the American Shoulder and Elbow Surgeons score was 88 points; the University of California, Los Angeles score was 32 points; and the Simple Shoulder Test score was 10 points. Final range of motion was forward flexion of 150°, abduction of 150°, external rotation of 10°, and internal rotation to L2.

Figure 4 **(A, B)** Vesicles and severe pain developed on the posterior neck and area under the right shoulder. The patient had 10° of forward flexion and 20° of abduction.