

CLINICAL NOTE

Winged Scapula Caused by a Dorsal Scapular Nerve Lesion: A Case Report

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ABSTRACT. Akgun K, Aktas I, Terzi Y. Winged scapula caused by a dorsal scapular nerve lesion: a case report. *Arch Phys Med Rehabil* 2008;89:2017-20.

Dorsal scapular nerve lesions are quite rare. A case of a 51-year-old man who had right shoulder pain, weakness of right arm elevation, and prominence of right scapula for 6 months is presented. The condition had been abruptly developed after lifting a heavy box overhead on which he felt a sharp pain in the right shoulder. On clinical examination, there was a prominence of the lower medial border and inferior angle of the right scapula compared with the left. In addition, the right scapula was located more lateral. Magnetic resonance imaging of the thorax revealed the presence of a thinner rhomboid major muscle with a pathologic signal compared with the other side. Needle electromyography of the right rhomboid muscle revealed a long duration, polyphasic motor unit potential with reinnervation potentials, and spontaneous activity. According to these findings, the patient was diagnosed as having a winged scapula because of dorsal scapular nerve lesion.

Key Words: Case report; Electromyography; Magnetic resonance imaging; Rehabilitation; Shoulder.

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SCAPULAR WINGING IS AMONG the common scapulothoracic disorders and may develop because of neuromuscular, musculoskeletal, and structural causes. Unilateral scapular winging most commonly results from the neuropathy of the long thoracic nerve innervating the serratus anterior muscle or the neuropathy of the accessory nerve innervating the trapezius muscle.^{1,2} The dorsal scapular nerve originates from the C5 spinal nerve. It pierces the middle scalene muscle and travels posteriorly between the posterior scalene muscle and the serratus posterior superior and levator scapulae muscles. The dorsal scapular nerve innervates the rhomboid major and minor muscles and, occasionally, the levator scapulae.³⁻⁵ Dorsal scapular nerve lesions are rare, but they may also cause scapular winging.^{1-3,6,7} Rhomboid weakness caused by an isolated dorsal scapular nerve lesion is the most unusual and difficult to discern condition on the examination for the diagnosis of scapular winging³; dorsal scapular nerve lesions may produce an unsuspected and thus an underdiagnosed component of shoulder pain.⁸

Here, we present a patient with a winged scapula caused by a dorsal scapular nerve lesion and discuss this condition in the light of previous reports.

CASE DESCRIPTION

A 51-year-old right-hand-dominant man was admitted to our shoulder clinic with a 6-month history of weakness of right arm elevation and a prominence of his right scapula. The condition had been abruptly developed after lifting a heavy box overhead on which he felt a sharp pain in the right shoulder.

There was no history of recent viral infection, immunization, sports injury, chiropractic manipulation, shoulder or thorax surgery, or family history. Physical examination revealed that the cervical spine was normal. No remarkable shoulder drooping and muscle atrophy was found at the right shoulder. The rhomboid, levator scapulae muscles, and medial border of scapula on the right side were tender with deep palpation. At rest, there was a prominence of the lower medial border and inferior angle of the right scapula compared with the left. In addition, the right scapula was located more lateral (fig 1) than the left, and this was markedly accentuated by active shoulder flexion and abduction (fig 2). Passive ROM of the right shoulder was normal. Active shoulder flexion and abduction were limited to 110°. Right shoulder retractor muscle strength was reduced compared with the left. Neurologic examination was otherwise normal. Impingement and apprehension signs were negative, and there were no acromioclavicular, bicipital, or subacromial tenderness.

Blood chemistry including muscle enzymes, hemogram, erythrocyte sedimentation rate, and thyroid function were normal. Plain radiographs and MRI of the cervical spine and shoulder joint were normal. The only remarkable finding was a thinner rhomboid major muscle compared with the other side in the MRI of the thorax. In addition, this muscle had pathologic signal (fig 3). In electrophysiologic examination, recordings obtained from the needle electrode at the right rhomboid muscle on the stimulation of Erb point showed prolonged distal latency of the dorsal scapular nerve compared with the left.⁹ Other upper-extremity motor and sensory nerve-conduction studies were normal. Needle electromyography of the right rhomboid muscle revealed a long duration, polyphasic MUP with reinnervation potentials, and there was spontaneous activity. A reduced interference pattern was present. Electromyography of trapezius, deltoid, serratus anterior, cervical paraspinous, and left rhomboid muscles were normal. According to these findings, the patient was diagnosed as having a winged scapula caused by a dorsal scapular nerve lesion.

Initially, the patient received a treatment program for 1 week, consisting of Codman's pendulum exercises (5 times a

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List of Abbreviations

MRI	magnetic resonance imaging
MUP	motor unit potential
ROM	range of motion
TOS	thoracic outlet syndrome

day for 5 minutes each time) and subsequent cold application (cold pack gel, 5 times a day for 20 minutes a session) on the shoulder with pain as well as a 500-mg paracetamol tablet (4 times day) and a 15-mg meloxicam tablet daily. Once his pain improved, a physical therapy and rehabilitation program consisting of active and passive ROM of the right shoulder and the neck, muscle-strengthening (mainly scapula stabilizing muscles, rhomboid and levator scapula) exercises, activity of daily living training, and general conditioning were initiated. The patient exercised 3 days a week in the clinic for 1 month. This was followed by a home exercise program. Three months after the treatment program, right shoulder weakness and scapular winging decreased in intensity. After 1 year, there was no weakness of the affected shoulder muscles, and neither pain nor limitation of shoulder motion was evident (fig 4). There was minimal scapular winging in the neutral position. The patient was satisfied with the recovery of his shoulder function. At the 2-year follow-up, the patient had no complaints, and the physical examination was normal.

DISCUSSION

Entrapment of the dorsal scapular nerve is easily overlooked as a cause of upper-arm pain.¹⁰ Because it has many anatomic variations and innervates many different muscle groups, dorsal scapular nerve entrapment may develop through various mechanisms. In general, dorsal scapular nerve entrapments are attributed to the hypertrophy of the middle scalene muscle.¹¹



Fig 1. At resting position, the lower medial border and inferior angle of the right scapula were more prominent compared with the left. In addition, the right scapula was more laterally located.

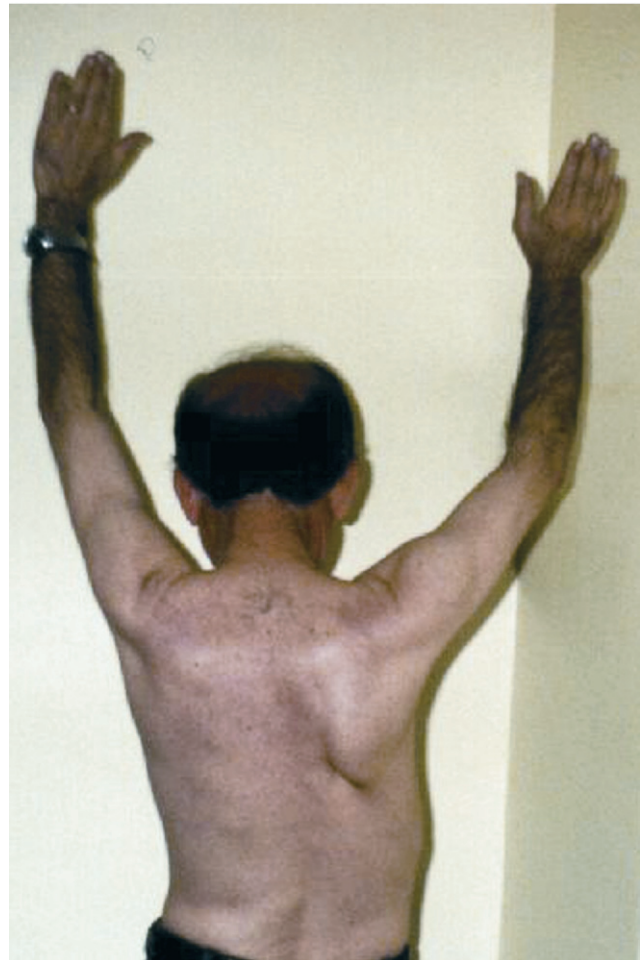


Fig 2. Active elevation of the arm was approximately 110°. Winging of the scapula was more remarkable during elevation.

Also, it may be affected with traumatic neural injuries, in particular with the lesions of the long thoracic nerve, which has an adjacent course or suprascapular nerve and may be entrapped alone.^{12,13} In the largest study on dorsal scapular nerve,

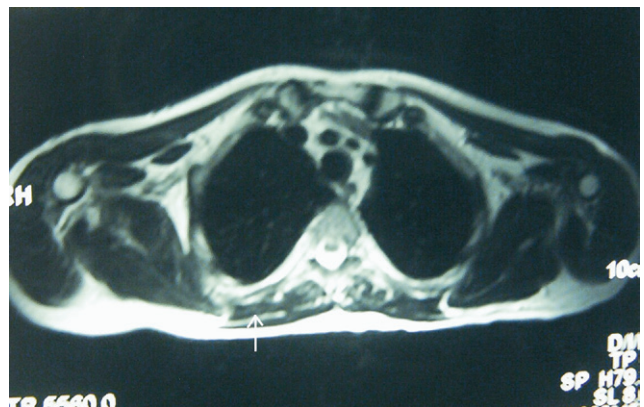


Fig 3. Thoracic MRI in T2-weighted axial sections. The right rhomboid muscle (white arrow) is thinner and has a pathologic signal. The right scapula is located more laterally.

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