



Case report

Unusual scapular winging – A case report



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ABSTRACT

Scapular mobility has a central role in maintaining normal upper limb function. Scapular winging is characterized by a failure in the dynamic stabilization of the scapula against the thoracic wall resulting in a condition in which the medial border of the scapula is prominent.

The following case describes a patient who was referred to physiotherapy due to abnormal scapular protrusion. The main findings of the physical examination showed weakness of the scapular stabilizers more prominent on the right side than of the left. Additionally, the physical examination demonstrated weakness of the abdominal muscles, hip adductors, and ankle dorsi-flexors, as well as some facial muscles. The electromyography results were inconclusive. Further examination led to clinical suspicion of Facioscapulohumeral Dystrophy (FSHD) as a diagnosis, which was confirmed by genetic testing.

Facioscapulohumeral Dystrophy is characterized by symptoms related to motor function and in most cases becomes evident in patients in their 20s and 30s. The disease signs and symptoms are often identified in a clinical setting. Currently, there are no reports describing an effective treatment for the disease. However, physiotherapy, moderate physical exercise, counselling, and use of suitable aids and orthoses may help improve functionality and mobility.

This case report aims to increase the awareness of musculoskeletal physiotherapists to this unique dystrophy, when encountering complex presentations with scapular winging.

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1. Introduction

Scapular winging is often a cause for pain, disability and functional limitation in the upper extremities (Zatz et al., 1998). Combined stabilization and scapular mobility is vital for normal shoulder function. When scapular stabilization is impaired, shoulder mobility may be limited to 90° abduction or less, and this impairment may impact the ability to perform loaded motion, such as lifting heavy objects as well as overhead activities of daily living (ADL) such as dressing and hair combing (Kibler, 1998). Scapular winging may also be distressing for esthetic reasons (Kauppila and Vastama ki, 1996; Martin and Fish, 2008).

Scapular winging is characterized by a failure in the dynamic stabilization of the scapula against the thoracic wall resulting in a condition where the medial border of the scapula is prominent. Appropriate functional control of the scapula during shoulder elevation involves coupled activation of upper and lower trapezius,

along with the serratus anterior and rhomboids. Both the upper and lower trapezius together rotate the scapula upwards, while the serratus anterior, a scapula protractor, stabilizes it to the chest wall and assists in upward rotation, and the rhomboids maintain traction of the medial border (Kibler, 1998).

Injury to either the nerves supplying these muscles, the muscles themselves, or their attachments to the scapula may lead to winging (Gooding et al., 2013). However, in the literature the most commonly described conditions leading to winging are serratus anterior palsy or long thoracic nerve injury (Gooding et al., 2013). Less common scapular winging presentations include brachial plexus injury, structural anomalies of the scapula including osteochondroma, fractures, neuropathies, or dystrophies (Fiddian and King, 1984; Kuhn et al., 1995).

The following case describes a patient who was referred to physiotherapy due to observed scapular winging. However, the findings of the assessments revealed an uncommon presentation.

2. Patient presentation

A 29-year-old male was referred to physiotherapy evaluation by a Pilates instructor who identified abnormal scapular position,

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Fig. 1. Observation from the front, back and side; Body form was tall and lean, postural changes include a protruding abdomen, bilateral atrophy of pectoralis major and biceps brachi, bilateral scapular winging (R > L), and asymmetrical shoulder's height (lower on the right = dominant side).



Fig. 2. Shoulder girdle muscle atrophy and wasting; Notice the 'Trapezius Hump' on the right—the upper scapular border is protruding upwards through the upper trapezius muscle, and is palpable as a bony structure where usually the upper trapezius muscle can be palpated.

unusual difficulty in shoulder elevation, and restricted trunk mobility.

2.1. Subjective examination

Pain was not a predominant complaint. The patient's aim was to improve posture for esthetic reasons in view of the family history of a very kyphotic grandfather. Mild functional disability (e.g. performing overhead activities, transition from supine to sitting position) was associated with reduced endurance and strength of the shoulders and abdominal muscles, but the patient presumed it was within normal range. Although pain free at rest, lower back discomfort (intensity 4/10) was reported. The discomfort was aggravated by activities such as playing basketball or standing still for over 10 min.

Moderate diffuse low back pain (LBP) started when the patient was 18–19 years old with no previous abnormality. A bone scan and x-ray were reported as normal. At age 20 he received the first physiotherapy treatments for his LBP. Four years later when attending physiotherapy for LBP, abnormal scapular mobility was

noted but treatment focused on his posture. Additionally, he participated in personal training sessions for two years aimed at improving general fitness, endurance, and strength.

2.2. Physical examination

The patient was tall and lean. The abdomen was protruding and there was visible evidence of bilateral atrophy of the pectoralis major and biceps brachi. Bilateral scapular winging (R > L) was also noted along with shoulder height asymmetry (lower on the right dominant side). Fig. 1 presents static posture as observed in the physical examination.

Full passive ROM was found in all upper and lower limbs and in the spine. Active shoulder elevation produced scapular winging bilaterally R > L.

Neurological examination was overall negative with normal muscle tone, stretch reflexes and sensation in all body parts. Table 1 presents the results of manual muscle testing of the shoulder girdle, trunk and lower limb. No abnormalities (5/5 MMT) were found around the elbow, wrist, hand, knee, and toe joints. The same testing revealed weakness of the hip adductors (3/5), ankle dorsi flexors (3+/5) (functionally, he was unable to walk on his heels), and most significant weakness in the scapular and abdominal muscles.

Table 1
Manual muscle testing results in physical examination.

	Resisted Movement	Primary muscle tested	Left	Right
Upper limb	Scapular elevation	Upper trapezius	5/5	5/5
	Scapular adduction	Rhomboids	4/5	4/5
	Scapular abduction and upward rotation	Serratus anterior	3/5	1/5
	Shoulder extension	Latissimus dorsi, Teres major, Posterior deltoid	4/5	4/5
	Shoulder flexion	Anterior Deltoid, Supraspinatus, Coracobrachialis	4/5	2/5
	Shoulder horizontal adduction	Pectoralis major	4/5	4/5
	Shoulder abduction	Middle Deltoid, Supraspinatus,	4/5	2/5
	Shoulder external rotation	Infraspinatus, Teres minor	5/5	5/5
	Shoulder internal rotation	Subscapularis	4/5	4/5
	Elbows, wrists & fingers		5/5	5/5
Trunk	Trunk flexion	Rectus abdominis, internal/external obliques	2/5	
Lower Limb	Hip adduction	Adductor magnus/longus/brevis, pectineus, gracilis	3/5	3/5
	Hip Flexion/Extension/ABD/IR/ER		5/5	5/5
	Knee Extension/Flexion		5/5	5/5
	Ankle dorsiflexion	Tibialis anterior	3+/5	3+/5
	Ankle Plantar-flexion/Eversion/Inversion, toes		5/5	5/5

The bold in table is to emphasize the main weak muscle groups.

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