

lesson of the month

Winged scapula

Not all shoulder pain arises from the shoulder joint. A meticulous history and thorough clinical examination is necessary to avoid missing an otherwise obvious diagnosis.

Lesson

The patient became aware of mild discomfort in his right shoulder, most noticeable when lying on the right side, and feared this might be the start of a 'frozen shoulder'. He could not lift his right arm across to part his hair, and was less able to push up windows or lift down books. He was able to continue real tennis, which does not require over-arm movements. He noticed that his right shoulder blade was rubbing on the seat of his car, and viewed in a mirror the medial border of the right scapula was prominent or 'winged'.

Cervical spine movement was slightly restricted. The right shoulder had a full range of passive movements, precluding 'frozen shoulder', and resisted movements were strong and painless, excluding joint or tendon pathology. Posteriorly, separation of the medial border of the right scapula from the rib cage was accentuated by pressing the hands forwards against a wall (Fig 1). 'Winged scapula' was therefore confirmed.

Electromyography revealed fibrillation potentials and positive sharp waves in the right serratus anterior muscle and stimulation of the long thoracic nerve elicited only a very small motor action potential. There was also a delayed motor latency in the left long thoracic nerve and reduced median and lateral cutaneous sensory potentials on the right. Thus a bilateral patchy neurological process was confirmed.

Comment

The causative lesion is damage to the delicate nerve to serratus anterior, described by Charles Bell in 1821.¹ Isolated 'winging' of the scapula results from weakness of the serratus anterior (magnus) muscle. The nerve arises from the fifth, sixth and seventh cervical nerves close to the intervertebral foramina, and can

therefore be compromised by local processes, such as cervical spondylosis. Many other causes have been reported, such as of local surgery, carrying heavy loads and physical activity.^{2,3} It is often part of a painful brachial neuritis or neuralgic amyotrophy,^{4,5} perhaps viral or autoimmune. This diagnosis is supported in this case by the electromyographic features and the initial pain.

Since the disability is slight and three quarters of patients recover in two years treatment is seldom necessary. However follow up is important to detect the small proportion of patients with serious pathology.

Serratus anterior has a linear origin from the upper ribs forming the medial wall of the axilla, and wraps posteriorly around the chest wall and is inserted into the costal surface of the medial border of the scapula. It pulls the scapula forward, rotating the lower border. It also facilitates the action of deltoid, so enabling the arm to be lifted above the head, as in combing the hair. It is the chief muscle for pushing and punching. A weakened serratus anterior action fails to hold the scapula flat against the chest wall so that 'winging' occurs.



Fig 1. Pushing against a wall accentuates 'winging'.

JA Mathews

MD FRCP, Emeritus
Consultant,
Musicians' Clinic,
Department of
Rheumatology

RPH Thompson

KCVO DM FRCP,
Emeritus
Consultant,
Gastrointestinal
Laboratory, Rayne
Institute

St Thomas'
Hospital, London

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'Winged scapula' is easily missed, and is often confused with other more painful and persistent disorders of the shoulder girdle if the clinical abnormality is not sought by examining the back while the patient is pressing forwards with his arms. It is probable that physical activity superimposed on brachial neuritis was the cause in this case.^{3,4,5}

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Note on contributors

RPHT was the patient and JAM the clinician.

References

- 1 Bell C. On the nerves; giving an account of some experiments on their structure and functions, which lead to a new arrangement of the system. *Phil Trans Royal Soc London* 1821;111:398–424.
- 2 Duralde XA. Evaluation and treatment of the winged scapula. *J South Orthop Ass* 1995;4:38–52.
- 3 Aval SM, Durand P, Schankwiler JA. Neurovascular injuries to the athlete's shoulder. *J Am Acad Orthop Surg* 2007;15:249–56.
- 4 Spillane JD. Localised neuritis of the shoulder girdle. *Lancet* 1943;2: 532–5.
- 5 McCarty EC, Tsairis P, Warren RF. Brachial neuritis. *Clin Orthop* 1999; 368:37–43.