From the Clinic

An uncommon shoulder injury

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Keywords: Latissimus dorsi, shoulder tendonitis, shoulder anatomy, electromyography of shoulder, manual therapy, injection therapy, throwing injuries

Over the past seven years both authors have studied an uncommon shoulder presentation with an incidence of approximately 1:40 in both practices. Evidence suggests the diagnosis of latissimus dorsi tendonitis. Diagnostic tests and therapy are outlined. Throwing injuries are the commonest scenario.

Case 1

A 21 year old male fell while water skiing one year before presentation. The impact with the water caused the right arm to be forcefully hyperextended while fully elevated. Symptoms persisted for nearly a year despite a course of anti-inflammatory medication, and included twinges of pain on reaching or elevating the arm.

Early in the summer of the following year he tried to play softball, but found that throwing exacerbated his pain. Physical examination of the shoulder, including active, passive and resisted movements revealed only limitation of internal rotation of the arm (inability to put the hand between the scapulae as shown in Figure 1).

Resisted (isometric) testing of isolated shoulder muscles revealed weakness and pain upon testing of latissimus dorsi during its prime motion of arm depression. The test is shown in Figure 2. There was full elevation and normal scapulohumeral movement. There was no painful arc on abduction. The acromioclavicular joint was normal. The capsule was stable and free.

The pain caused by the resisted arm depression was generally posterior to the shoulder and axillary. Palpation of the latissimus dorsi and its tendon revealed marked tenderness near the insertion into the bicipital groove, and also just caudad at the junction of tendon and muscle belly. Deep cross-fibre friction massage was applied to these areas for one minute, as described by Cyriax¹. Immediate re-testing now showed improved range of active movement, plus increased power and less pain.

The tender areas were then injected with a mixture of triamcinolone 40mg/ml in plain one per cent xylocaine. Amounts were two drops of triamcinolone in 1ml xylocaine. The needle was inserted and partially withdrawn several times in an attempt to cover the whole of the tender areas. The injection is not into the tendon, but adjacent (Figure 3). This was followed by more cross-fibre massage. The patient was seen a week later, and had been able to play softball. Follow-up at six months showed no problem.

Case 2

A 30 year old male mechanic presented in June 1987 with a history of right shoulder pain of one month's duration

Figure 1. Patient unable to place right hand between scapulae

Figure 2. Supine patient attempting resisted depression of internally rotated arm

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0306-4179/90/020125-02

Figure 3. Injection of latissimus dorsi tendon near insertion at bicipital groove

following a long throw in a softball game. He complained of pain at work, mainly that he could not exert strong pull upon a wrench. As in the previous case, regular physical examination plus detailed testing of all muscle-tendon units revealed only the isolated finding of limited internal rotation of the arm, with associated weakness and pain on the test for latissimus dorsi. Treatment was the same, again with rapid resolution. He remained well at follow-up at one week and six months.

Discussion

Both authors have worked for many years in the musculoskeletal field and see large numbers of shoulder problems. Both employ the Cyriax system of shoulder examination. This is fully described in his book¹ and basically augments the regular physical examination with detailed resisted (isometric) testing of individual muscles. The scheme is shown in Table 1. Note that latissimus dorsi and also the teres muscles are not included. These seem not to have been considered important by Cyriax in the context of painful shoulders.

One author (CF) devised a test for latissimus dorsi, based on its known functions and began to find occasional positive responses. Further study revealed that both authors were seeing similar cases. Over 100 have now been found, and all have responded quickly and, it seems, permanently.

Throwing injuries have been the most common scenario, with spurts of incidence in the Spring of the past two years,

coinciding with the commencement of the softball season. There are other presentations as well, as illustrated by Case 1. It is well known that throwing injuries to the shoulder most often involve the capsular ligaments and/or the rotator cuff².

However, it seems that isolated injuries to muscles do occur. In addition to latissimus dorsi, we have seen rare cases of teres major involvement, and one case of subscapularis injury. Considering the acceleration phase of throwing, which is almost pure depression of the internally rotated arm, perhaps it is surprising that injuries to the latissimus dorsi are not more frequent. Perhaps it is overlooked when other injuries take priority at onset.

A mention of anatomy is in order⁴. The tendon of latissimus dorsi is a thick strap-like structure which wraps around the inferior border of teres major, sharing a bursa at that point, then passing towards its insertion in the floor of the bicipital groove. Here there is another bursa between the tendon and the shaft of the humerus. This may be of clinical importance, because, in our patients, we noted a considerable variation in the level of pain which did not correlate well with restriction or weakness. We feel that this raises the possibility of concomitant bursitis with a painful arc on internal rotation. The electromyography of latissimus dorsi and teres major^{3,5} is interesting, and shows that while latissimus dorsi functions in both active and resisted phases, teres major has no activity in unresisted motion.

Acknowledgements

The authors wish to thank Dr David Mallory, his wife Debbie, and Dr Richard Hunter for assistance with photography.

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Table 1. Basic examination of shoulder movements (Cyriax¹) (Prepared by R. Barbor)

Thirteen movements	Arthritis (capsulitis)	Chronic subdeltoid bursitis	Acromio-clavicular joint strain	Supraspinatus tendinitis	Infraspinatus tendinitis	Subscapular tendinitis	Adductor strain	Biceps tendinitis
Active elevation	+	-	-	-	-	-	-	-
Passive elevation	+	-	+	±	-	-	+	-
Passive scapulohumeral abduction	30°*	-	+	-	-	-	-	-
Passive lateral rotation	60°*	-	+	-	-	-	-	-
Passive medial rotation	5°*	-	+	-	-	-	-	-
Passive adduction	-	-	++	-	-	±	-	-
Painful arc	-	+	-	±	±	±	-	-
Resisted abduction	-	-	-	++	-	-	-	-
Resisted adduction	-	-	-	-	-	-	+	-
Resisted lateral rotation	-	-	-	-	++	-	-	-
Resisted medial rotation	-	-	-	-	-	++	+	-
Resisted extension of elbow	-	±	-	-	-	-	-	-
Resisted flexion of elbow	-	-	-	-	-	-	-	+

* Limitation in these proportions = capsular pattern