LETTER / Breast imaging

Snapping brachialis

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A snapping brachialis muscle is a rare and often overlooked condition (only two cases reported in the literature [1,2]). Its diagnosis is easy clinically and is confirmed by ultrasound as long as the condition is known and the possibility of it is borne in mind. This condition is responsible for a painful anteromedial snapping movement at the elbow during extension of the forearm with the hand in supination.

Unless there is significant disability, treatment is conservative, through a healthy lifestyle avoiding sports and movements triggering the snapping.

Observation

A 33-year-old, right-handed, male patient consulted for painful snapping felt at the anteromedial aspect of the right elbow, which occurred after a tennis match. The initial clinical examination revealed moderate swelling of the elbow with pain localized in the anteromedial region of the right elbow. There was no sensorimotor deficit and flexion/extension and pronation/supination movements were not limited.

Snapping was felt on the anteromedial surface of the elbow at the end of extension of the forearm with the hand in supination. Because of its painful nature, the patient avoided movements which triggered it. Antero-posterior (AP) and profile X-rays of the elbow were normal.

Dynamic ultrasound, performed 15 days after the start of symptoms, showed that the medial part of the brachialis muscle was in an abnormal position during flexion, being located outside the medial border of the trochlea: during extension of the hand in supination, the brachialis muscle returned abruptly to its position and this translation was responsible for the snapping felt on palpation and clearly visible with the ultrasound probe (Figs. 1 and 2).

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Figure 1. Ultrasound slice of the right elbow obtained during flexion. The medial part of the brachialis muscle (arrows) is abnormally located outside the medial border of the trochlea (arrowhead).

Figure 2. Ultrasound slice of the right elbow obtained during extension. The brachialis muscle (arrows) has returned to its usual position inside the medial border of the trochlea (arrowhead).

Figure 3. Proton-density weighted MRI slice with fat saturation obtained during flexion: the medial part of the brachialis muscle (arrows) is abnormally located outside the medial border of the trochlea (arrowhead) with focal hyperintensity.

Figure 4. Proton-density weighted MRI slice with fat saturation obtained during extension, at the same position as Fig. 3. The brachialis muscle (arrows) has returned to its usual position inside the medial border of the trochlea (arrowhead).

Figure 5. Position of ultrasound and MRI slices.

Discussion

An MRI was performed 20 days after the trauma, including T1-weighted and proton-density with fat suppression (PDFS) sequences in flexion and extension of the forearm. The PDFS slices revealed a small area of hyperintensity in the medial myoaponeurotic region of the brachialis muscle (Figs. 3–5). The sequences in flexion and extension showed the same as the ultrasound, with the medial part of the brachialis muscle positioned abnormally outside the medial border of the trochlea in flexion, and inside the medial border of the trochlea, the normal position, in extension. Apart from this, the other elbow structures were intact.

The brachialis is located deep in the anterior compartment of the arm (behind the biceps brachii muscle). Its origin is on the anterior surface of the distal half of the diaphysis of the humerus. It descends vertically to terminate in a thick tendon on the anterior surface of the coronoid process of
the ulna. It is a powerful flexor of the forearm on the arm. It is innervated by the musculocutaneous nerve.

In the normal state, the medial part of the brachialis muscle is situated within the medial border of the troclea, and there is no translation during extension of the elbow, as the ultrasound image of the right elbow of a control subject shows (Fig. 6). The brachialis therefore "snaps" during extension, when the muscle is returning to its normal position.

Common causes of elbow pain are primarily medial and lateral epicondylitis, rupture of the ulnar collateral ligament and bone lesions (due to trauma, tumour or infection).

Other rare brachialis muscle conditions have been reported which also cause elbow pain, but without snapping. These were isolated rupture of the brachialis muscle [3], myonecrosis of the brachialis muscle secondary to physical exercise [4], and tuberculous abscesses of the brachialis and biceps brachii muscles [5].

Snapping of the brachialis muscle has been described in two cases in the literature: the first was secondary to hyperextension strain of the forearm associated with median nerve neuropathy [1], and the second involved snapping which occurred spontaneously without any triggering trauma, with pain and paraesthesia [2]. Both of the cases described were diagnosed clinically and by imaging and surgery.

In our case, brachialis muscle snapping was diagnosed using dynamic ultrasound which showed this snapping of the brachialis muscle at the anteromedial region of the elbow joint.

The MRI exploration showed a small area of abnormal hyperintensity in the medial myoaponeurotic region of the brachialis muscle probably related to a myoaponeurotic lesion (Figs. 3 and 4). The flexion and extension sequences gave the same results as the ultrasound image i.e.:• in flexion: an abnormal brachialis pathway which is displaced outside the medial border of the troclea;• in extension: the muscle returns to its normal position by passing medially with translation over the medial border of the troclea; it is this translation which was responsible for the snapping.

Moreover, the tendons of the biceps and triceps muscles and the bicipital aponeurosis were intact. There are other causes of unstable elbow snapping which do not involve the brachialis muscle, which may be linked to synovial hyper trophy forming a fold interposed in the radio-humeral joint [6], to an intra-articular foreign body, an abnormality of the annular ligament [7], or snapping of the triceps tendon along the medial epicondyle [8]. All of these cases of snapping occur in the lateral or posterior region of the elbow, unlike in our patient whose snapping was felt in the anteromedial region of the elbow.

Conclusion

A snapping brachialis muscle is a rare and often overlooked condition. It should be suspected when faced with painful snapping on the anteromedial surface of the elbow, in contrast to other popping of the elbow which is felt in the posterior or lateral regions of the elbow. It occurs either spontaneously or following trauma that has arisen during hyperextension. Diagnosis is made using ultrasound which is easily accessible, rapidly performed, inexpensive, and permits real-time dynamic study. MRI in flexion and extension also helps diagnose the condition.

Disclosure of interest

The authors declare that they have no conflicts of interest concerning this article.

References


