Trauma or tumour: giant cell tumour of distal biceps tendon sheath, an unusual cause of elbow pain

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Abstract

We report the case of a middle-age lady who presented following minor trauma, with dominant-sided anterior elbow pain and swelling of 6 months in duration. She was assessed clinically, and underwent investigations, which confirmed features consistent with giant cell tumour (GCT) of distal biceps tendon sheath. She underwent uneventful en-bloc excisional surgery. She did not have radiotherapy. She is now 5 years postoperatively asymptomatic, with full function, and with no signs of recurrence.

Keywords

anterior elbow pain, biceps tendon, elbow, giant cell tumour tendon sheath

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Introduction

We report the first case of giant cell tumour (GCT) of distal biceps tendon sheath in the English language literature, and our successful management, with 5 years of follow-up. Our case report highlights the importance of considering the distal biceps tendon sheath GCT as a potential cause of anterior elbow symptoms.

Case report

A 52-year-old woman presented with persistent pain and swelling in her right elbow antecubital fossa, of 6 months in duration. She reported a forceful extension injury at the time, which was a result of carrying her grandson up the stairs.

Clinical evaluation revealed tenderness and swelling, measuring approximately 3 cm × 3 cm in size, around the distal biceps tendon. The swelling was nonpulsatile, with no overlying skin tethering features. There was no local rise in temperature or skin discoloration. She had full range of movement of her elbow, and her neurovascular status distally of the limb was normal. Hook test was negative. A partial distal biceps tendon rupture was clinically suspected.

Investigations

Roentgenographic findings of the affected elbow were unremarkable.

Magnetic resonance imaging was preformed after an inconclusive ultrasound scan examination (Figure 1). This showed a well-defined lobulated mass around the distal biceps tendon close to its insertion onto the radial tuberosity.

The mass was largely of similar signal intensity to muscle on the fat sensitive-fluid suppressed T1 images but brighter than muscle on the fluid sensitive fat suppressed T2 imaging. It contained some low signal intensity areas. These appearances were reported to be

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Figure 1. (A) T1 image, sagittal view of the elbow, demonstrating a well defined lobulated mass around the distal biceps tendon. It is of similar signal intensity to the muscles. (B) T2 image demonstrating the same lobulated mass, brighter than the muscle. Whilst containing some low signal intensity areas.

compatible with a synovial proliferative lesion such as giant cell tumor of the tendon sheath, as seen in other musculoskeletal sites.

Treatment

Advice was sought from the local tumour service, which recommended excisional biopsy. The patient had an uneventful en-bloc excision, under general anaesthetic, through a short curved S anterior incision. The mass was found to be encapsulated, and minimal repair of the tendon was needed. After an uneventful wound healing period, she was allowed to progress as freely as comfortable with physiotherapy, as well as with a full range of movements as freely as comfortable.

Outcome and follow-up

The histological examination of the biopsy was undertaken by a musculoskeletal histopathologist, and was confirmed to be a GCT of the distal biceps tendon sheath. No malignant features were identified and the excision was reported to be complete (Figure 2).

Therefore, the patient did not have radiotherapy treatment postoperatively.

Five years subsequent to the patient's surgical treatment, she is asymptomatic, with no signs of local recurrence or distant metastasis concerns.

Discussion

Giant cell tumours of tendon sheaths are generally considered as benign tumors.¹ Édouard Chassaignac was the first to describe it, in 1852, as a fibrous xanthoma.² It has also been referred to by multiple names, including localized nodular tenosynovitis, pigmented villonodular proliferative synovitis, sclerosing

haemangioma, benign synovioma, proliferative synovitis, xanthoma, xanthogranuloma, xanthosarcoma, myeloid endothelioma, fibrohemosideric sarcoma, giant cell fibrohaemangioma, pigmented villonodular tenosynovitis, fibroma, myeloma, myeloxanthoma and fibrous histiocytoma.³ Some studies have considered it neoplastic,⁴ whereas others consider it to have an inflammatory origin.⁵

It is most commonly diagnosed in the fourth and fifth decades of life (range 4 years to 82 years), with a preponderance towards female sex.¹ The commonest sites to be affected are digit of a hand, palm, wrist, foot, ankle and knee, with only one case affecting the elbow joint.¹

Although the majority of reported cases had no particular symptoms other than painless and palpable mass, only approximately 31% of patients in the case series by Adams et al.³ experienced tenderness or dull ache, similar to our patient.

Radiographs in cases of giant cell tumours of tendon sheaths are not usually diagnostic, and were reported to be normal in up to 32%,⁶ which is comparable to our case. Nevertheless, it might demonstrate a soft tissue mass or features of bony erosions.³

Ultrasound scans have been reported to be of potential benefit in the diagnosis of GCT of flexor tendon sheaths of fingers, with increased vascularity seen on Doppler studies.⁷

Magnetic resonance imaging is considered the gold standard radiological investigation. Darwish and Haddad⁸ reported revealing a low signal intensity on both T1- and T2-weighted images. By contrast, our case, which is confirmed to be a tendon sheath GCT on histological basis, revealed a signal intensity that was largely similar to the muscles on T1 images. On the T2 images, it was brighter than the muscle, with some low signal intensity areas.

Figure 2. (A) Histological cross section: Hematoxylin and Eosin (HE), original magnification X100; demonstrating lobulated well circumscribed tumour. (B): HE, original magnification x200. Demonstrates mixed lesional infiltrate composed of histiocytoid cells and plump spindle cells with some compartmental stromal fibrosis. Multinucleated, osteoclast-like giant cells are noted.

The overall consensus for treatment of GCT of tendon sheath is local excision.¹ Indeed, this was the advice of our local tumour centre with respect to our case. A pseudocapsule is usually present;¹ therefore, the tumour can often be removed en-bloc. All of the surrounding tissues should be examined intra-operatively and, if any satellite lesions are found, they should be excised and, at the same time, care should be taken to preserve the tendon, arteries and nerves. If erosion of the bone has occurred, curettage to remove the cortical shell is advised.³

In a series of 85 patients, Wright⁹ reported that failure to excise the lesion fully could lead to local recurrence in rates of up to 44%. It was recommended that radiotherapy comprises an essential adjunct treatment to reduce the recurrence rate, with rates of recurrence dropping to 0% and 4%.⁹ In our case, intra-operative macroscopic appearance and microscopic assessment histologically confirmed complete excision, and no malignant cellular features were seen. After discussion with the local tumour service, our patient did not undergo radiotherapy and, in 5 years, there have been no concerns about recurrence.

Declaration of Conflicting Interests

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Ethical review and patient consent

Written informed consent was obtained from the patient.

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