Unusual association of diseases/symptoms

Atraumatic quadriceps tendon tear associated with calcific tendonitis

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Summary

Calcific tendonitis of the quadriceps tendon is an uncommon condition. We present the first case of a quadriceps tendon tear associated with calcific tendonitis. In this case, the patient presented with symptoms mimicking a rupture of the quadriceps tendon. This case illustrates that although calcific tendonitis of the quadriceps is a rare condition it is not benign and should be considered when investigating acute symptoms associated with the extensor mechanism of the knee.

BACKGROUND

Calcific tendonitis is defined as the presence of macroscopic deposits of hydroxyapatite (a crystalline calcium phosphate) in a tendon¹ and is a multifocal, cell-mediated calcification process.² It has been described associated with most joints of the body and is particularly common in the rotator cuff tendons of the shoulder.¹⁻³ Calcific tendonitis of the quadriceps tendon is reported uncommonly.⁴⁻⁶

Rupture of the quadriceps tendon is usually traumatic and has been described in association with infection, gout, obesity, hyperparathyroidism, systemic lupus erythematosus and chronic renal failure.⁷⁻¹⁰

We present the case of a partial quadriceps tendon tear associated with calcific tendonitis of the quadriceps with symptoms mimicking rupture of the tendon.

CASE PRESENTATION

A 43-year-old man carpenter presented to the emergency department describing an acute onset of severe right knee pain. There was no history of trauma. The patient felt otherwise well with no reported symptoms of malaise or fever. He reported that prior to the acute event he had suffered from mild knee pain for approximately 1 year and this had been managed with short courses of non-steroidal anti-inflammatory drugs. He was discharged from the emergency department with a diagnosis of suprapatellar bursitis but represented 1 week later with persistent pain in the right knee.

On review at this time, he remained systemically well. The right knee was warm to touch with localised erythema over the superior pole of the patella and a grade 1 effusion. The patient was unable to straight leg raise and passive flexion was limited to 20°.

INVESTIGATIONS

Blood results showed a C reactive protein level of 7.9 mg/l and white cell count of $7.2 \times 10^9/l$. Joint fluid aspirate was unremarkable with no organisms seen on Gram stain, no

growth following extended incubation on enriched culture medium, and no crystals.

Plain radiographs of the knee showed a classical bony spur 'whiskers'^{3-6 11} and erosion at the insertion of the quadriceps tendon into the patella (figure 1). There was no chondrocalcinosis.

Ultrasound examination revealed no evidence of a quadriceps or patella tendon rupture but did delineate a focal area of tissue or collection around the quadriceps tendon. An MRI demonstrated similar findings but demonstrated a likely tear of the central portion of the distal quadriceps tendon (figure 2a,b).

Figure 1 Plain radiograph of the knee showing a classical bony spur and erosion at the insertion of the quadriceps tendon into the patella.

Figure 2 (a and b) MRI demonstrating tear of the central portion of the distal quadriceps tendon.

TREATMENT

A diagnosis of a quadriceps tendon tear was made and the patient was booked for operative intervention. Intraoperatively, a central quadriceps tendon tear was confirmed in association with white, chalky material embedded in the central portion of the tendon and inflammatory tissue over the superior pole of the patella. The abnormal material was removed by curette and histology excluded gout.

The defect in the quadriceps tendon was repaired and the patient did well postoperatively and had an uneventful discharge.

OUTCOME AND FOLLOW-UP

At 6-week follow-up, the patient had a fully active straight leg raise and was capable of both passive and active flexion to 90°. At 12-month follow-up the patient reported no impairment to his active lifestyle and no knee pain. His range of movement at 12 months was 0–130° flexion.

DISCUSSION

Calcific tendonitis is a cell-mediated process² which uncommonly affects the quadriceps tendon.^{4–6} Although a degree of calcification may occur as part of the ageing process, our patient was young and otherwise fit and well. Operative findings demonstrated a significant chalky deposit in the body of the tendon and calcific tendonitis has not previously been reported in association with an atraumatic tear of the quadriceps tendon. In this case, the patient's symptoms mimicked quadriceps tendon rupture as has been reported previously with calcific tendonitis of the patella tendon.¹² The diagnosis was made only after multimodality imaging had been performed, followed by surgical exploration.

The majority of the research on calcific tendonitis relates to its presence in the shoulder. This is because it is a relatively common condition in the shoulder, being present in approximately 7% of patients with shoulder pain.¹³ Here, calcific tendonitis may be managed in a number of ways including conservative medical management, extracorporeal shockwave therapy and arthroscopic or open surgery.¹ Conservative management is effective in greater than 60% of cases of calcific tendonitis in the shoulder and surgery is only advocated for severe or refractory symptoms.^{13–14} Ultrasound and extracorporeal shockwave therapy is more effective than sham therapy but further research is required into this treatment modality.^{14–15} A similar response and natural history might be expected in the quadriceps tendon in the absence of an acute tear or rupture. In the shoulder, a rotator cuff tear associated with dystrophic calcification at the site of the tear is thought to be associated with a poor prognosis.¹ Furthermore, calcific tendonitis may increase the risk of a rotator cuff tear.¹⁶ Given the comparative rarity of calcific tendonitis of the quadriceps tendon, similar data has not been published for this condition, but it is probable that similar associations would be found in this group of patients.

Partial tears of the quadriceps tendon are generally managed conservatively in a full extension brace for 6 weeks followed by protected range of motion exercises with good outcomes and regain of function.⁷ In the case of complete quadriceps tendon rupture or where diagnosis is uncertain, repair is advocated as outcomes of conservative management in terms of disability and weakness are poor.⁷ Our patient was managed by open, operative treatment due to the severity of the symptoms and imaging findings suggesting tendon damage but some remaining diagnostic uncertainty. There was an excellent recovery to baseline level of function. Given that calcific tendonitis may be associated with worse outcomes in rotator cuff tears of the shoulder, a lower threshold for surgical exploration and debridement in cases of quadriceps tendon tears in association with calcific tendonitis may be appropriate.

Our case demonstrates that calcific tendonitis is not a benign condition and an awareness of the condition and the potential complication of quadriceps tendon damage is important when investigating acute symptoms associated with the extensor mechanism of the knee.

Learning points

- Calcific tendonitis is not a benign condition.
- Calcific tendonitis should be considered when investigating acute symptoms associated with extensor mechanism of the knee.

Competing interests None.

Patient consent Obtained.

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