An Unusual Case of Lateral Knee Calcific Tendonitis within the Popliteofibular Ligament-Arcuate Complex: A Novel Minimally Invasive Treatment Option

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Abstract

Acute calcinosis of the ligaments and soft tissues surrounding the knee joint is a rare pathology typically presenting with acute pain. Here we describe a 40 year old lady who presented with acute lateral knee pain which was subsequently confirmed on MRI scan to be caused by calcification within the popliteofibular ligament-arcuate complex. After failure of simple analgesia, full resolution of symptoms was achieved using ultrasound guided therapeutic needle aspiration (barbotage) and steroid injection. Reviewing the literature there is a small series of cases of calcific tendonitis in the knee. However to our knowledge this is the first documented case specifically involving the popliteofibular ligament-arcuate complex and the successful management with ultrasound-guided barbotage and steroid injection.

Introduction

Acute calcinosis of the soft tissues surrounding the joint is pathology of unclear aetiology most commonly described in the perarticular region of the shoulder, classically affecting the supraspinatus tendon [1-20]. However, there is limited literature describing its presence in the soft tissues of the knee joint.

We report a case of acute calcinosis involving the popliteofibular ligament-arcuate complex in the knee presenting with acute lateral knee pain. To our knowledge, the successful management of this condition in the knee joint using ultrasound-guided barbotage and steroid injection has not previously been described in the literature.

Case Presentation

A 40 year old lady was referred to our orthopaedic clinic with acute onset lateral knee pain. Mechanism of injury was thought to be a twisting mechanism whilst gardening. There was no history suggestive of systemic upset and she had no past medical history of note. To examine, the knee was warm to touch and tender over the lateral aspect without any obvious effusion. Range of motion was limited to 0-70 degrees. Inflammatory markers were mildly deranged (CRP 10, ESR 36). Her white cell count, calcium and phosphate were all normal.

An initial ultrasound scan showed acute calcific tendinopathy of the lateral ligaments and supporting structures including the distal biceps femoris tendon. This was confirmed with an X-ray (Figure 1 and 2). She then proceeded to MRI scan which revealed the calcification to be located within the popliteofibular ligament-arcuate complex.

Unfortunately our patient experienced ongoing pain despite the use of simple analgesic medications and the decision was made to proceed with ultrasound guided barbotage. The skin was first anaesthetised using 1% xylocaine. An 18 gauge needle was then advanced through skin and subcutaneous tissue towards the calcified deposits within the lateral knee ligamentous structures. Calcified particulate materials were then aspirated. Following this 10mg of kenacort was infiltrated into the involved region. The aspirated material was found to be consistent with calcium hydroxyapatite.

By 1 week after the procedure the patient felt significant improvement in pain and function within the knee and by the 6 week follow-up our patient reported complete resolution of symptoms which was supported by radiological improvement on follow-up imaging. This was considered to be a successful outcome, allowing our patient to return to her gardening once again.
Discussion

Throughout the literature acute calcinosis of the soft tissues surrounding the joint is described using a variety of names, perhaps most appropriately referred to as “calcific periarthritis” [20]. It results from the deposition of hydroxyapatite crystals in periarticular soft tissues [20]. Such calcifications may remain asymptomatic in up to 65% of people and blood tests are of limited utility in the absence of overt inflammation [20]. Initially thought to be a form of dystrophic calcification resulting from repeated trauma, the exact pathophysiology remains unclear [21]. Surprisingly, metabolic disturbances involving calcium and phosphate rarely contribute [21].

Although most commonly described when involving the shoulder joint, classically the supraspinatus tendon, the literature is rich with descriptions of calcific periarthritis affecting other sites including the hip, wrist, elbow, hand, neck and the knee [20-21]. Clinically, it presents with acute pain, however, depending on the location of the tissues involved it can present with other clinical signs often mimicking other common pathologies [20]. For example, when involving the knee joint it may cause fixed-flexion deformities, “locked-knee” or even sciatic nerve irritation [20-21].

Therapeutic needle aspiration (barbotage) of the calcium deposits is a well described and recognised management option in the treatment of refractory supraspinatus tendinitis [20]. Although the efficacy of barbotage is yet to be tested by means of a rigorous randomised control trial, a 2014 systematic review which included over 900 patients concluded that ultrasound-guided barbotage is a safe procedure with a high success rate and a low complication rate [22].

To put this case in context our research team conducted a comprehensive literature review. Using the keywords “calcinosis + and + knee” across Medline (both EBSCO and Ovid), CINAHL, Cochrane and Up-to-date databases. This resulted in a total of 19 case reports involving calcinosis around the knee (7 MCL, 6 LCL, 4 popliteal, 1 ACL, 1 PCL) [1-19]. Specifically, no cases were identified that made specific mention to the popliteofibular ligament-arcuate complex. The management strategies employed in these cases ranged from conservative (simple analgesia and steroid injection) to operative (surgical excision of the calcification). Nowhere to our knowledge was there a case which described the usage of ultrasound guided barbotage together with steroid injection in the management of calcific periarthritis of the knee joint.

Unfortunately, the low prevalence of this pathology precludes the possibility of a rigorous randomized comparison of operative and non-operative interventions. However, based on our experience with this case we suggest the consideration of ultrasound-guided barbotage and steroid injection as a possible early therapeutic option in the management of these patients, potentially allowing the avoidance of unnecessary surgical and anaesthetic risk.

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References


