Rare disease

Calcium pyrophosphate dihydrate deposition in the trochanteric hip bursa presenting as acute hip pain

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Summary

Acute hip pain is a common reason for attendance to hospital. Immediate diagnoses include occult fractures, infectious and non-infectious inflammatory processes such as gout and pseudogout. Calcium pyrophosphate deposition disease (CPDD) is a rheumatological syndrome affecting articular cartilage and/or synovial fluid. It can occur as a clinical presentation (pseudogout) where calcium pyrophosphate dihydrate (CPPD) crystals are deposited within the joint space or radiographically, as chondrocalcinosis (CC), where CPPD crystals are deposited onto articular cartilages. Extraarticular manifestations of CPDD are rare. The authors report a case of CPPD deposition in the trochanteric bursa of a 35-year-old woman presenting as acute hip pain. The patient was treated successfully during arthroscopy with removal of the deposits and excision of the bursa. The patient remains well at 6 month follow-up.

BACKGROUND

This is an unusual case of acute hip pain in which the diagnosis is a rare cause of the pain. The treatment proved to be a success in this case and we feel this is a good case report for both diagnostic and educational purposes

CASE PRESENTATION

A 35-year-old Caucasian woman, working as a district nurse presented with a 5 day history of progressive isolated left hip pain, severe pain on ambulating, with no significant medical history. She was a non-smoker, non-drinker and denied use of any medications. Before the onset of the symptoms, she was independent and able to ambulate.

INVESTIGATIONS

On physical examination of lumbar spine, there was no tenderness; range of spinal movement was good with flexion of the lumbar spine almost full. Physical examination of the hip revealed tenderness along the left hip greater trochanter but not in the groin. There was no evidence of overlying skin changes or erythema. No sensory or motor deficits in the limb were noted. Dorsalis pedis and posterior tibial were palpable. Straight leg raise, internal and external rotation revealed an almost full range of movement in the hip without significant worsening in the pain.

Admission x-ray of the hip was normal with no evidence of fractures, lytic lesions, osteoarthritic changes or evidence of calcification. Admission blood tests namely C reactive protein (CRP), erythrocyte sedimentation rate (ESR) and white blood cell count were within normal limits. MRI of the hips and pelvis revealed no joint effusion, evidence of calcification, arthritis or periarticular oedema.

DIFFERENTIAL DIAGNOSIS

There are many causes of acute hip pain in young adults (18–35 years old) but other more common causes should be excluded before a diagnosis of CPPD crystal deposition

is made. Immediate diagnoses include occult fractures and these should be excluded by a thorough history as well as use of joint imaging if indicated. While taking the history it should also be possible to narrow down whether the cause of symptoms is intra-articular or extra-articular. Infectious and non-infectious processes should be ruled out again from the history but alongside this baseline bloods should be taken; for example inflammatory markers to rule out any obvious inflammatory processes. Imaging should also be used to rule out any arthritic changes. Any pathology in the hip at a young age increases the likelihood of problems later in life and it is useful to educate patients regarding this.¹

TREATMENT

A diagnosis of greater trochanteric bursitis was made and corticosteroid injections were attempted into the trochanteric bursa with minimal relief from pain. Subsequent left hip arthroscopy was performed revealing calcification and CPPD deposition within the greater trochanter bursa similar to that seen in chondrocalcinosis. This area was removed with a shaver and the bursa excised (figure 1).

OUTCOME AND FOLLOW-UP

Six month follow-up shows the patient is pain free and now ambulating fully.

DISCUSSION

This is the first case to our knowledge to document CPPD deposition in the trochanteric bursa of a young non-osteoarthritic hip sufficient to cause acute hip pain.

Acute hip pain is common reason for attendance to hospital. Immediate diagnoses include occult fractures, infectious and non-infectious inflammatory processes such as gout, pseudogout, osteoarthritis (OA) and inflammatory arthritis. Additional diagnoses that should be considered in such a case of more trochanteric pain with only moderate impairment of joint function should be trochanteric

Figure 1 (A–D) Arthroscopic surgery to remove the CPPD deposits.

bursitis. As outlined above, this preliminary diagnosis was made and the patient treated with corticosteroids to no effect. Such a treatment usually provides symptomatic relief to bursitis related symptoms.²

Calcium pyrophosphate deposition disease is a term used to describe symptoms and clinical signs associated with CPDD deposition into the synovium and/or articular fibro or hyaline cartilages of a joint.^{3–5} Typically knee and wrist are involved with less frequently elbow, ankle and metacarpophalangeal joints involved.⁶ The majority of patients are asymptomatic however, a variety of clinical syndromes or radiological findings may present.^{7–8} Pseudogout is an acute monoarthritis presenting as a painful, swollen and red joint due to joint space inflammation from CPPD crystals deposited into the synovial fluid. Pseudogout is a localised pathology however, systemic markers of inflammation such as ESR and CRP are elevated. Notably this was not seen in the case described here.

Risk factors for CPDD deposition include age, trauma, genetic predisposition, metabolic syndromes and a previous history of co-existent OA. Literature has also reported that previous steroid injection use can act as a risk factor for CPPD crystal formation; a point to consider in this particular case.⁹ Age appears to have the strongest association with CPDD.¹⁰ Most closely associated metabolic diseases implicated in causing CC are hereditary haemochromatosis (HH), hyperparathyroidism and hypomagnesia.^{10–13} Thirty per cent of HH sufferers are found to have CC in the joints and the number of joints affected correlates with age, ferritin level and serum PTH.¹⁰ HH has familial inheritance however, systematic genetic screening has not been

recommended since the frequency of HH in patients with sporadic CC is very low.

Suggestions of a link between primary hyperparathyroidism and CC come from uncontrolled case series or case reports. Similar to HH the prevalence of hyperparathyroidism in patients with CC is low.¹⁰ The association between hypomagnesia and CC has been mainly demonstrated in patients with Gitelman's or Bartter syndrome.^{10–11} Given the low incidence of sporadic CC in patients under the age of 55, current opinion is that it is reasonable to screen such patients with CC for the above metabolic conditions.

Learning points

- This case demonstrates a rare presentation of extra-articular CPDD presenting as acute hip pain in a young patient. Notably the systemic inflammatory markers were normal which is atypical of an acute monoarthritis caused CPDD (pseudogout).
- The patient responded well to removal of the deposits using a shaver during arthroscopy.
- Acute monoarthritis remains a common presenting complaint of patients to an acute orthopaedic service.
- We suggest that once first line diagnoses and investigations have been considered, in the absence of trauma or a systemic inflammatory response, extra-articular CPDD should be considered in all patients irrespective of age.

Competing interests None.

Patient consent Obtained.

REFERENCES

1. **Troum OM**, Crues JV 3rd. The young adult with hip pain: diagnosis and medical treatment, circa 2004. *Clin Orthop Relat Res* 2004;**418**:9–17.
2. **Announ N**, Guerne PA. Treating difficult crystal pyrophosphate dihydrate deposition disease. *Curr Rheumatol Rep* 2008;**10**:228–34.
3. **Brennan KE**, McGrory BJ. Monoarticular pseudogout of the hip: a case report. *Hosp Pract (Minneap)* 2011;**39**:74–7.
4. **Fam AG**. Calcium pyrophosphate crystal deposition disease and other crystal deposition diseases. *Curr Opin Rheumatol* 1992;**4**:574–82.
5. **Snaith ML**. ABC of rheumatology. Gout, hyperuricaemia, and crystal arthritis. *BMJ* 1995;**310**:521–4.
6. **Hamilton LC**, Biant LC, Temple LN, *et al*. Isolated pseudogout diagnosed on hip arthroscopy. *J Bone Joint Surg Br* 2009;**91**:533–5.
7. **Schumacher HR**. Crystal-induced arthritis: an overview. *Am J Med* 1996;**100**:46S–52S.
8. **Zarins B**, McInerney VK. Calcium pyrophosphate and pseudogout. *Arthroscopy* 1985;**1**:8–16.
9. **Fahey M**, Mitton E, Muth E, *et al*. Dexamethasone promotes CPPD crystal formation by articular chondrocytes. *J Rheumatol* 2009;**36**:163–9.
10. **Richette P**, Bardin T, Doherty M. An update on the epidemiology of calcium pyrophosphate dihydrate crystal deposition disease. *Rheumatology (Oxford)* 2009;**48**:711–5.
11. **Sarraf P**, Kay J, Reginato AM. Non-crystalline and crystalline rheumatic disorders in chronic kidney disease. *Curr Rheumatol Rep* 2008;**10**:235–48.
12. **Richette P**, Bardin T, Doherty M. An update on the epidemiology of calcium pyrophosphate dihydrate deposition disease. *Rheumatology* 2009;**48**:711–15.
13. **Lagier R**, Vasey H. Calcium pyrophosphate dihydrate (CPPD) crystal deposition in the trochanteric bursa of a patient with hip osteoarthritis. *J Rheumatol* 1986;**13**:473–4.

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Please cite this article as follows (you will need to access the article online to obtain the date of publication).

Salar O, Mushtaq F, Ahmed M. Calcium pyrophosphate dihydrate deposition in the trochanteric hip bursa presenting as acute hip pain. *BMJ Case Reports* 2012;10.1136/bcr.12.2011.5426, Published XXX

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