CASE REPORT

Acute crystal deposition arthritis of the pubic symphysis

Tsuneaki Kenzaka,¹ Tetsuji Wakabayashi,² Yoshinori Morita²

¹Division of General Medicine, Center for Community Medicine, Jichi Medical University School of Medicine, Shimotsuke, Tochigi, Japan

²Jichi Medical University School of Medicine, Shimotsuke, Tochigi, Japan

Correspondence to

Dr Tsuneaki Kenzaka, smile.kenzaka@jichi.ac.jp

SUMMARY

A 68-year-old woman presented with an acute onset of lower abdominal pain. A CT scan of the pelvis showed acute crystal deposition arthritis, and her symptoms markedly reduced with non-steroidal anti-inflammatory drugs. Further, a radiographic evaluation of the right knee joint and CT of the cervical spine revealed calcification; calcium pyrophosphate (CPP) crystals were identified in the synovial fluid of the right knee. This established the diagnosis of CPP crystal deposition disease, while the inflammation of the pubic symphysis was considered as acute crystal deposition arthritis related to calcium pyrophosphate dihydrate crystal deposition. Acute crystal deposition arthritis of the pubic symphysis should be considered in the differential diagnosis of lower abdominal pain.

BACKGROUND

Calcium pyrophosphate (CPP) crystal deposition disease is associated with the deposition of calcium pyrophosphate dihydrate (CPPD) crystals in the articular cartilage and surrounding tissues, which is observed on plain radiography images as calcifications. Pubic symphysis is a common site for CPPD crystal deposition; however, the development of an acute CPP crystal arthritis (pseudogout) at this site is extremely rare. Here, we report a case of acute CPP crystal deposition arthritis of the pubic symphysis.

CASE PRESENTATION

This case involves a 68-year-old woman with a 20-year history of hypertension. She experienced lower abdominal pain suddenly, without any trigger, and 3 days later, she visited a local doctor. She experienced pain and tenderness localised to the pubic region during movement and was prescribed oral acetaminophen. However, the pain did not subside and she had difficulty in walking; therefore, she was referred to our hospital.

After admission, her blood pressure was 142/86 mm Hg, pulse rate 72 bpm, respiratory rate 18 breaths/min and body temperature 37.4°C. The physical findings revealed tenderness around the lower abdominal area extending to the suprapubic area, with the maximum intensity being at the point directly above the pubis. The area was somewhat swollen but there was no redness or feeling of warmth. Moreover, no abnormality was observed in the pubic area and lower extremities.

The laboratory findings were as follows: a white blood cell count of 11 600 cells/μl (neutrophils 73%), C reactive protein 10.8 mg/dl, uric acid 5.8 mg/dl, Ca 9.4 mg/dl, inorganic orthophosphate 3.2 mg/dl, glycosylated haemoglobin (National Glycohaemoglobin Standardization Programme) 5.3%, serum iron 49 μg/dl, ferritin 81.6 ng/ml, unsaturated iron-binding capacity 270 μg/dl, serum copper 168 μg/dl, ceruloplasmin 41 mg/dl, intact parathyroid hormone 35 pg/ml and activated vitamin D 46.7 pg/ml. The results of other laboratory tests were within the normal range.

A CT scan of the pelvis (figure 1) showed swelling of the soft tissue, and calcification was observed in the ventral aspect of the pubic symphysis.

DIFFERENTIAL DIAGNOSIS

Haemochromatosis; copper deposition disease of the pubic symphysis or sacroiliac joint; gout; cellulitis and purulent arthritis.

TREATMENT

After differential diagnosis, cellulitis was considered. However, antimicrobial drugs were not used since calcification was observed; she was administered oral non-steroidal anti-inflammatory drugs (NSAIDs), and her progress was observed. The oral drug administration significantly reduced the symptoms, suspecting the condition of acute crystal

Figure 1 CT scan of the pelvis soft tissue showing swelling around the pubic symphysis along with calcification in the joints.

To cite: Kenzaka T, Wakabayashi T, Morita Y. *BMJ Case Rep* Published online: [please include Day Month Year] doi:10.1136/bcr-2013-009239

Figure 2 Radiograph of the right and left knee joints; calcification of the cartilage of the right knee joint.

deposition arthritis. Next, a plain radiographic examination of the wrist and knee joints, which are common sites of crystal deposition, as well as a simple CT scan of the cervical spine were performed. Calcification was observed in the right knee joint (figure 2) and around the odontoid process of the cervical spine (figure 3), such as that observed in the crowned dens syndrome. Aspiration of synovial fluid from the right knee joint confirmed the presence of CPP crystals. This established the diagnosis of a CPP crystal deposition disease, while the inflammation of the pubic symphysis was also considered as an acute CPPD crystal deposition.

OUTCOME AND FOLLOW-UP

Oral administration of NSAIDs significantly improved the symptoms, and the patient was able to walk and was discharged on the 4th day after hospitalisation.

DISCUSSION

CPP crystal deposition disease is associated with CPPD crystal deposition in the articular cartilage and surrounding tissues, which are observed as calcifications on plain radiography images. The disease is classified into four types: (1) asymptomatic CPPD, (2) acute CPP crystal arthritis (pseudogout), (3) osteoarthritis (OA) with CPPD and (4) chronic CPP crystal inflammatory arthritis.¹ The incidence of crystal deposition increases with age and is shown as 15% in people aged 65–74 years, 36% in people aged 75–84 years and approximately 50% in people aged more than 85 years.² Moreover, the underlying conditions may include hyperparathyroidism, Wilson's disease, haemochromatosis, hypothyroidism, hypophosphataemia and hypomagnesaemia.

Figure 3 CT scan of the cervical spine calcification around the odontoid process of the spine.

Hayashi *et al*³ presented the findings in a 34-year-old man with idiopathic CPPD crystal deposition disease in the axial and appendicular skeleton. However, early-onset CPPD crystal deposition disease is generally of the hereditary or secondary type associated with a metabolic disease.

The common sites for crystal deposition are the knee, 50–88%; wrist, 20% and other joints such as the ankle, hip joint, pubic symphysis, shoulder and transverse ligaments of the spine.⁴

Moreover, acute crystal deposition arthritis is induced when phagocytosis of the crystals released into the joint cavity occurs by synovial mononuclear phagocytes and neutrophils results in the release of lysosomal enzymes and various inflammatory mediators.⁵ In approximately 25% of cases, CPPD deposition disease presents with symptoms of acute crystal deposition arthritis. Apart from the deposition of CPPD crystals, the disease can also be caused by deposition of hydroxyapatite and calcium oxalate. The joints prone to acute crystal deposition arthritis include the wrist, metacarpophalangeal articulations, hip joint, shoulder, elbow and ankle, with the most susceptible being the knee joint.⁶ Acute crystal deposition arthritis is one of the common causes of acute monoarthritis. While Song *et al*⁷ reported a case of CPPD crystal deposition disease presenting as an acute polyarthritis, concurrent attacks in more than one joint are unusual.

Comparative observations of cases of CPPD deposition at the pubic symphysis have been made; however, no studies were found on acute crystal deposition arthritis.

General physicians may not necessarily have comprehensive knowledge of acute crystal-induced arthritis. Further, the condition is easily overlooked by not performing a thorough examination of the pubic symphysis, because many patients may not be very comfortable with the physical examination. The condition is benign and can be effectively treated using NSAIDs; however, the disease should be considered in the differential diagnosis of lower abdominal pain to avoid unnecessary examinations and prescriptions of antimicrobial drugs.

To conclude, we report a case of acute crystal deposition arthritis of the pubic symphysis that occurred because of CPPD crystal deposition. Further, we recommend that acute crystal deposition arthritis of the pubic symphysis should be considered in the differential diagnosis of lower abdominal pain.

Learning points

- ▶ Cases of calcium pyrophosphate dihydrate crystal deposition at the pubic symphysis do occur.
- ▶ Thus far, no case study has shown acute crystal deposition arthritis of the pubic symphysis, but such cases may have been overlooked.
- ▶ Acute crystal deposition arthritis of the pubic symphysis should be considered in the differential diagnosis of lower abdominal pain.
- ▶ If the patients have lower abdominal pain considering the possibility of acute crystal deposition arthritis, the physician should perform a thorough clinical examination of the pubic symphysis.

Contributors TK prepared the manuscript, while YM and TW contributed in drafting of the manuscript.

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

REFERENCES

- 1 Zhang W, Doherty M, Bardin T, *et al*. European League Against Rheumatism recommendations for calcium pyrophosphate deposition. Part I: terminology and diagnosis. *Ann Rheum Dis* 2011;70:563–70.
- 2 Wilkins E, Dieppe P, Maddison P, *et al*. Osteoarthritis and articular chondrocalcinosis in the elderly. *Ann Rheum Dis* 1983;42:280–4.
- 3 Hayashi M, Matsunaga T, Tanikawa H. Idiopathic widespread calcium pyrophosphate dihydrate crystal deposition disease in a young patient. *Skeletal Radiol* 2002;31:246–50.
- 4 Ogata M. A clinical study of calcium pyrophosphate dihydrate crystal deposition disease. *Nihon Seikeigeka Gakkai Zasshi* 1985;59:819–34.
- 5 Martinon F, Petrilli V, Mayor A, *et al*. Gout-associated uric acid crystals activate the NALP3 inflammasome. *Nature* 2006;440:237–41.
- 6 Molloy ES, McCarthy GM. Calcium crystal deposition diseases: update on pathogenesis and manifestations. *Rheum Dis Clin North Am* 2006;32:383–400.
- 7 Song JS, Lee YH, Kim SS, *et al*. A case of calcium pyrophosphate dihydrate crystal deposition disease presenting as an acute polyarthritis. *J Korean Med Sci* 2002;17:423–5.

Copyright 2013 BMJ Publishing Group. All rights reserved. For permission to reuse any of this content visit <http://group.bmj.com/group/rights-licensing/permissions>.
BMJ Case Report Fellows may re-use this article for personal use and teaching without any further permission.

Become a Fellow of BMJ Case Reports today and you can:

- ▶ Submit as many cases as you like
- ▶ Enjoy fast sympathetic peer review and rapid publication of accepted articles
- ▶ Access all the published articles
- ▶ Re-use any of the published material for personal use and teaching without further permission

For information on Institutional Fellowships contact consortiasales@bmjgroup.com

Visit casereports.bmj.com for more articles like this and to become a Fellow