CASE REPORT

Rare cause of hip pain in a young girl

Ali Raza,¹ Kailash Kailash,² Ajay Malviya¹

¹Department of Trauma & Orthopaedics, Wansbeck General Hospital, Northumberland, UK
²Department of Trauma & Orthopaedics, University Hospital Crosshouse, Kilmarnock, UK

Correspondence to
 Ali Raza,
 dr_ali_raza@hotmail.com

Accepted 16 April 2014

SUMMARY

Synovial chondromatosis (SC) is a rare benign disorder of unknown aetiology resulting in multiple cartilaginous loose bodies that form within a synovial joint. It is predominantly seen in men (2:1) in the third and fifth decade of life and is extremely rare in children. Hip joint is an extremely rare and unusual site of presentation thus leading to delay in diagnosis and associated morbidity. We report a successfully treated case of SC in a 12-year-old girl complaining of hip pain over a year. In addition, this is also the first case of a child with SC of the hip being treated arthroscopically.

knowledge, this is the first reported case of SC of hip joint treated arthroscopically in a paediatric patient.

CASE PRESENTATION

A 12-year-old girl was referred to a paediatric orthopaedic surgeon by her general practitioner (GP) with complaints of having pain in the right-hip trochanteric region over past 1 year. This pain was vague in nature with radiation down the back of the thigh and calf. There were no associated paresthesias or numbness anywhere in the leg and her father noticed that she was not walking normally. She was otherwise fit and well without any history of trauma or previous hip disorder. She had no symptoms of any systemic joint involvement neither was there any family history of joint disorders. X-rays of the right hip and pelvis performed a year ago were unremarkable ([figure 1](#)).

Her GP has been managing her on oral analgesics and physiotherapy. Since she consistently had symptoms of pain and had no improvement after physiotherapy, she was then referred to an orthopaedic surgeon for further management.

In the orthopaedic clinic, her initial examination revealed that she was walking with a limp and was slightly circumducting her right leg during the swing phase of gait. The Trendelenburg test was negative. There was no obvious leg length discrepancy. She had full-hip flexion with some discomfort around the groin. Both internal and external rotations were markedly restricted. Internal rotation of the right hip was restricted to 20° in comparison to 60° in the contralateral hip joint. Distal neurovascular and spinal examinations were essentially normal.

BACKGROUND

Synovial chondromatosis (SC) is a rare benign disorder of unknown aetiology resulting in multiple cartilaginous loose bodies that form within a synovial joint. It is predominantly seen in men (2:1) in the third and fifth decade of life and is extremely rare in children.¹ Most often it is monoarticular in presentation but more than one joint involvement is not uncommon. Knee is most commonly affected followed by elbow, shoulder and hip joint. Literature search on PubMed and EMBASE has revealed only four reported cases of SC of hip joint in children.²

SC exists as either primary (idiopathic), or as secondary resulting from an underlying condition that irritates the joint capsule of the bursal lining.¹ These conditions include rheumatoid arthritis, trauma, osteoarthritis to name a few. Although the molecular basis is still unclear, high levels of bone morphogenetic protein (BMP)-2 and BMP-4 have been isolated from diseased synovium and free bodies. These growth factors may be involved in the pathological metaplasia observed in SC.³ To our

Figure 1 Anteroposterior pelvis and frog-leg lateral view showing both the hip joints.

To cite: Raza A, Kailash K, Malviya A. *BMJ Case Rep* Published online: [please include Day Month Year] doi:10.1136/bcr-2014-203802

Figure 2 T2-weighted MRI showing coronal (right image) and transverse sections (left image). White arrows point towards loose bodies within the hip joint capsule.

INVESTIGATIONS

X-rays of the right hip and pelvis showed demineralisation and subtle coxa magna (3 mm) of the right femoral head in comparison to contralateral hip (figure 1). A provisional diagnosis of slipped upper femoral epiphysis (SUFE) or Perthes disease was made, and MRI of the hip was requested.

MRI of her hip joint revealed joint effusion with inhomogeneous speckle appearance representing multiple loose bodies (figure 2). This pointed towards possible diagnosis of SC of the hip joint.

DIFFERENTIAL DIAGNOSIS

SUFE, Perthes disease, juvenile rheumatoid arthritis, SC, pigmented villonodular synovitis, idiopathic chondrolysis of the hip, neoplasia.

TREATMENT

The patient underwent hip arthroscopy to confirm the diagnosis. Hip arthroscopy revealed multiple loose bodies inside the hip joint which were removed followed by synovectomy (figures 3 and 4). Complete synovectomy could not be performed which is usually not possible by hip arthroscopy. Open synovectomy of the hip was not performed as the patient was skeletally immature and an open procedure runs the risk of avascular necrosis (AVN) of the hip joint.

OUTCOME AND FOLLOW-UP

The patient was totally asymptomatic at 6 weeks follow-up and was walking without limp and pain.

DISCUSSION

SC although rare in adults is even rarer in the paediatric population. A large majority of children presenting to GP, A&E or even to the orthopaedic department with new onset hip pain usually are investigated for septic hip, irritable hip, Perthes disease, SUFE, articular or periarticular fracture or even referred pain from the spine. Most of the published case reports of SC in children are related to the knee or elbow. Literature search conducted on PubMed and EMBASE has shown only five reported cases of SC affecting the hip joint in children.

Although mostly intra-articular, SC can be extra-articular in nature affecting the synovial sheath. Extra-articular SC has no particular presentation in terms of age or gender. In contrast to intra-articular SC, extra-articular tends to affect mostly hands, wrists and feet.⁴ In 1977, Milgram proposed three different phases of SC including early, transitional and late. In early phase, there is only active synovial disease in the absence of loose bodies. Transitional phase is characterised by active synovial disease and loose bodies. In the late phase, synovial disease process becomes inactive and only loose bodies are present.⁵

Patients with SC present with pain, swelling, stiffness and even locking of the involved joints. Treatment mainly focuses on

Figure 3 Multiple loose bodies visualised on hip arthroscopy.

Figure 4 Sample of loose bodies collected inside a container.

removal of loose bodies and excision of synovium to prevent further development of loose bodies. Treatment is also dictated by the age of the patient and by the type of joint involved. In children operative intervention can be a bit hazardous due to the presence of open physis. Since the advent of arthroscopy, the removal of loose body has become ever so easy. Having said that, synovectomy still can be a challenge as complete synovectomy is usually not possible with arthroscopic technique, thus potentially leading to recurrence of loose bodies.

In the past, surgical hip dislocation has been performed to facilitate removal of loose bodies and synovectomy. Surgical hip dislocation is not devoid of complications with risk of iatrogenic AVN of the head of femur and potential damage to growth plate in children with open physis. Pelker *et al*⁶ has described a case of open synovectomy of the hip and removal of loose bodies in an 11-year-old boy who presented with severely restricted painful hip for 5 months. After initial period of unsuccessful conservative management, the patient underwent surgical hip dislocation using the anterior (Smith-Peterson) approach. Postoperative rehabilitation included hip spica for 1 month followed by partial weight bearing for 6 months. Despite the patient having had an open synovectomy, follow-up radiographs showed recurrence of asymptomatic loose bodies. At 3.5 years of follow-up, the patient remained asymptomatic. There were no complications like AVN or growth plate problems.

In our case, the use of hip arthroscopy significantly reduces, if not eliminates, the risks of AVN or damage to growth plate as it is a minimally invasive procedure. In addition, hip arthroscopy does not involve a prolonged rehabilitation period as it is a day case procedure and the patient is allowed full weightbearing as comfortable after surgery. One drawback of hip arthroscopy is

difficulty in performing a complete synovectomy due to technical reasons. Having said that, in the case report by Pelker *et al*, open synovectomy is no reassurance in preventing the recurrence of loose bodies. Our patient at the latest follow-up remained asymptomatic with full pain-free range of motion of hip joint.

We have described a very unique case of SC involving hip joint in a young girl. It is also the only reported case involving hip in this age group being treated with hip arthroscopy. In this particular patient, hip arthroscopy proves much safer than open arthrotomy by minimising the risks of damage to growth plate and/or femoral head blood supply.

Learning points

- ▶ Synovial chondromatosis (SC) is a rare benign disorder of unknown aetiology resulting in multiple cartilaginous loose bodies that form within a synovial joint.
- ▶ Predominantly seen in men (2:1) in the third and fifth decade of life and is extremely rare in children.
- ▶ Diagnosis is usually suggested by MRI showing multiple loose bodies within the synovial joint.
- ▶ Complete synovectomy may not be possible with arthroscopic techniques, thus potentially leading to recurrence of loose bodies.

Contributors The whole article is primarily written by AR. KK has provided valuable information by helping with literature search. AM helped by giving valuable comments on the overall format of the manuscript.

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

REFERENCES

- 1 Ko E, Mortimer E, Fraire AE. Extraarticular synovial chondromatosis: review of epidemiology, imaging studies, microscopy and pathogenesis, with a report of an additional case in a child. *Int J Surg Pathol* 2004;12:273–80.
- 2 Cahuzac JP, Lebarbier P, Germaneau J, *et al*. Synovial chondromatosis in children. *Chir Pediatr* 1979;20:89–93.
- 3 Nakanishi S, Sakamoto K, Yoshitake H, *et al*. Bone morphogenetic proteins are involved in the pathobiology of synovial chondromatosis. *Biochem Biophys Res Commun* 2009;379:914–19.
- 4 Karlin CA, De Smet AA, Neff J, *et al*. The variable manifestations of extraarticular synovial chondromatosis. *AJR Am J Roentgenol* 1981;137:731–5.
- 5 Milgram JW. Synovial osteochondromatosis: a histopathological study of thirty cases. *J Bone Joint Surg Am* 1977;59:792–801.
- 6 Pelker RR, Drennan JC, Ozonoff MB. Juvenile synovial chondromatosis of the hip. A case report. *J Bone Joint Surg Am* 1983;65:552–4.

Copyright 2014 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