

BILATERAL FRAGMENTED PATELLA – A NORMAL VARIANT OR PATHOLOGY?

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ABSTRACT

Osteochondrosis are self-limiting disturbances of endochondral ossification characterized by radiological fragmentation and sclerosis of the involved bone. Presenting a case of 06 years old girl with bilateral painful knees and diagnosed to have fragmented patellae.

Keywords: osteochondrosis, patella, children, ossification centre.

Case Report

A 6 year old active female girl with no known comorbid presented to the pediatrician's OPD clinic with 3 months history of persistent bilateral knee pain. She reported no previous history of trauma. On examination she had mild swelling of both knees and was tender to palpation. There was no associated overlying skin redness.

AP and lateral X rays were done of both knee joints. Plain X rays revealed fragmented and mottled appearance of patellae bilaterally with irregular margins as shown in (Fig. 1a and 1b). Rest of the



Figure 1a & b: Plain X- rays revealed fragmented and mottled appearance of patellae bilaterally with irregular margins

bones of the knee joints were normal with normal overlying soft tissues. Fat planes were intact. After reviewing the X rays it was decided that plain MRI of the knee should be performed for further evaluation. Plain MRI of the left knee was performed with water sensitive sequences. The MRI showed a fragmented mottled patella with irregular borders and loss of normal contour. It appeared heterogeneous on T2WI (Fig. 1c), hypointense on T1WI (Fig. 1d), hyperintense

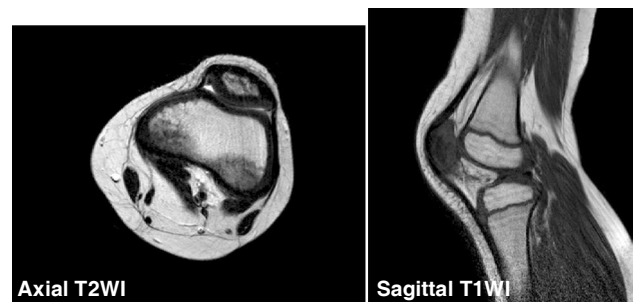


Fig 1c(Axial T2WI) and 1d (Sagittal T1WI): The MRI showed a fragmented mottled patella with irregular borders and loss of normal contour. It appeared heterogeneous on T2WI, hypointense on T1WI with no joint effusion.

on coronal STIR images and heterogeneously low on PD and heterogeneously hyperintense on PD fat sat images. There was no joint effusion. A final diagnosis of Kohler's of primary ossification centre

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of patella was made on the basis of history, clinical examination, X ray appearances and MR features. Differential diagnosis for this imaging appearance would include:

1. Sinding-Larsen Johansson syndrome
2. Patellar tendinopathy
3. Hoffa syndrome
4. Patellofemoral pain syndrome
5. Occult fracture
6. Juvenile Idiopathic Arthritis
7. Osteomyelitis
8. Normal variant.

The patient was on conservative treatment and treated symptomatically with rest and analgesics. The patient was followed in the OPD for a period of 6 months and was managed conservatively. The pain and swelling subsided spontaneously and the patient resumed normal activities with normal range of movements.

Discussion

Osteochondrosis are self-limiting disturbances of endochondral ossification characterized by radiological fragmentation and sclerosis of the involved bone.¹ In 1908 Köhler first described osteochondrosis of the tarsal navicular in three patients, a condition now commonly referred to as "Köhler's disease" of the navicular bone. In one of these cases he also noted osteochondrosis of the primary patellar ossification center, a condition rarely reported in the literature since then.² Moffat presented in 1929 the second case in a 7-year old child.³ The secondary ossification centre of the patella is much more frequently affected by osteochondrosis, a condition also known as Sinding-Larsen-Johansson syndrome.^{4,5} Osteochondrosis of both ossification centers has been reported as well.⁶ The etiology of osteochondrosis remains uncertain. Growth spurt, catch-up growth or strenuous sports activities have been postulated to be the cause of this benign disease in children between 5 and 9 years of age.^{2,3,6-8} Osteochondrosis represent a group of self-limiting

disturbances of endochondral ossification of the epiphyses and apophyses of children or adolescents. Many of these injuries result in osteonecrosis in the avulsed fragment. Radiographically, they are characterized by bone fragmentation and sclerosis.⁸ There are at least twelve eponymic syndromes among this group of illnesses. The spectrum of sites ranges from large epiphyses like the femoral head (Legg-Calve-Perthes' disease) to the small metatarsal head (Freiberg's infraction). Among the osteochondroses are two well-known syndromes associated with the quadriceps mechanism: 1) Osgood-Schlatter disease, an avulsion of the tibial tuberosity, and 2) Sinding-Larsen-Johansson disease, a chronic avulsion injury of the lower pole of the patella. A less well-described injury to the patella is chronic avulsion and fragmentation of the superior pole.

In patellar osteochondrosis, rarely the primary ossification centre is affected, and seen more often between the ages of 5 and 9 known as Köhler's disease. More frequently, the secondary ossification centre, usually at the distal pole, is involved between the ages of 9 and 11 known as Sinding-Larsen Johanson. Superior pole osteochondrosis of patella has been reported in the literature on only a handful of occasions. The broader insertion of the quadriceps in this area probably distributes traction forces more evenly. Superior pole osteochondrosis of patella can be distinguished from bipartite changes by both radiographically and by noting the clinical history and symptoms.

The etiology of osteochondrosis is multifactorial, caused by abnormal development, acute injury, and/or overuse of the growth plate and surrounding ossification centers. The patella develops by endochondral ossification at primary and secondary ossification centers. Primary centers are responsible for longitudinal bone growth; secondary centers contribute to spherical growth. The patella forms around the ninth week of embryonic life as a cartilaginous mass. Primary ossification occurs between 3 and 6 years old; secondary centers appear in early adolescence and close during early adulthood.¹² The condition seems to be self limited and most likely runs a benign course with a favorable prognosis.¹³

Literature review suggests that this is the fifth such reported case and the second case of isolated bila-

teral osteochondrosis of primary ossification centre of the patella. This is the first such case from Pakistan. Osteochondrosis of the primary ossification of the patella is a rare cause of knee pain and swelling in a young child and should be considered in the differential diagnosis. The clinician and radiologist should be aware of its presentation.

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