Case 15207

Subperiosteal haematoma (ECR 2017 Case of the Day)
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Section: Paediatric radiology
Area of Interest: Musculoskeletal bone Paediatric
Procedure: Sclerosis
Imaging Technique: MR
Imaging Technique: CT
Special Focus: Trauma Case Type: Clinical Cases
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Patient: 16 years, male

Clinical History:

A 16-year-old boy with a univentricular congenital heart defect underwent a cardiac and liver/abdominal MRI as a follow-up. The scan revealed a large right-sided iliac lesion. He is sports active, and reported mild right-sided hip pain after a blunt trauma during alpine skiing two years earlier, now painless.

Imaging Findings:

Radiography show a well-defined lens-shaped osteolytic lesion in the right iliac wing with some sclerosis. On CT there is a lens-shaped, well delineated lesion on the medial aspect of the right iliac bone, located to the periosteum with normal underlying bone structure. There are central "cyst-like" hypo-dense areas with a rim of ossified bone marrow, thinning of the cortex and absence of soft tissue swelling. The corresponding MR findings reveals signal changes are consistent with liquefaction, with high signal intensity on T2- and intermediate on T1-weighted images. There are small high-signal areas of fat and a peripheral rim contrast enhancement.

Discussion:

Background: Subperiosteal haematoma in the iliac bone is a rare condition that may cause hip pain. It is usually secondary to a blunt trauma, a fall on the buttocks or sports accident. Athletic adolescents have strong pelvic musculature that can cause traction on the loosely attached periosteum and nutrient vessels resulting in the subperiosteal bleeding.

Clinical Perspective: This condition mainly affects children/adolescents with predilection site in the skull, tibia or iliac bone. It may be insidious without external evidence of trauma, as ecchymosis or swelling, dismissed as muscle strain, stay undetected, or be an incidental finding in the chronic phase. In general, this haematoma occurs without history of bleeding disorders although the same finding can be seen in haemophilic or anticoagulated patients (haemophilic pseudotumour) [1]. If the haematoma extends into the iliac muscle stretching of the overlying femoral nerve, it may occur with the possibility of femoral nerve palsy requiring imaging investigation [1-4].

Imaging Perspective: Radiography may show a well-circumscribed, lens-shaped osteolytic or ossified lesion in the iliac wing with the variable sclerosis. Typical CT findings describes a lens-shaped, well delineated ossified lesion on
the medial aspect of the iliac bone, located to the periosteum with normal underlying bone structure. In the chronic phase, there are variable central "cyst-like" hypodense areas with a rim of ossified bone marrow, thinning of the cortex and absence of soft tissue swelling or oedema. The corresponding MR findings depend on the age of the haematoma. In this chronic haematoma, signal changes are consistent with liquefaction, with high signal intensity on T2- and intermediate on T1-weighted images (including small high-signal areas of fat) with peripheral rim contrast enhancement. These are signs of a non-aggressive lesion that should be easily distinguished with the typical lens shape from bone cysts (aneurysmal), lipoma, and fibrous dysplasia, frequently seen in the iliac bone [2].

Outcome: This is a self-limiting disorder, which in the acute phase can be painful and requires treatment as an anaesthetic or corticosteroid injection but rarely needs evacuation. If the femoral palsy is present, it may resolve completely or remain with a continued weakness [1, 5].

Take-Home Message: Subperiosteal iliac haematoma is a rare, benign condition that can present as acute hip pain in adolescents or be asymptomatic in young adults, and an incidental finding. The typical eccentric lens shape along with benign traits, including fat content, of the osseous lesion should make further investigation with needle biopsy unnecessary.

Differential Diagnosis List: Subperiosteal haematoma, chronic phase, Lipoma, Fibrous dysplasia, Aneurysmal bone cyst, Ewing sarcoma, Subperiosteal haematoma

Final Diagnosis: Subperiosteal haematoma, chronic phase

References:

Ben Zakoun, J et al. (2014) Chronic ossified subperiosteal hematoma of the iliac bone. Diagn Interv Imaging Sep;95(9):889-91 (PMID: 24746760)
Figure 1

Description: X-ray revealing a radiolucent oval area over the right iliac wing. Origin: de Lange C, Div. of Radiology and Nuclear Medicine, Rikshospitalet, Oslo University Hospital, Oslo, Norway
Figure 2

Description: CT coronal plane
Origin: de Lange C, Div. of Radiology and Nuclear Medicine, Rikshospitalet, Oslo University Hospital, Oslo, Norway
Figure 3

Description: CT sagittal plane Origin: de Lange C, Div. of Radiology and Nuclear Medicine, Rikshospitalet, Oslo University Hospital, Oslo, Norway
Figure 4

Description: CT axial plane

Origin: de Lange C, Div. of Radiology and Nuclear Medicine, Rikshospitalet, Oslo University Hospital, Oslo, Norway
Figure 5

Description: MR pelvis T2 coronal plane

Origin: de Lange C, Div. of Radiology and Nuclear Medicine, Rikshospitalet, Oslo University Hospital, Oslo, Norway
Figure 6

Description: MR pelvis T1 axial plane  

Origin: de Lange C, Div. of Radiology and Nuclear Medicine, Rikshospitalet, Oslo University Hospital, Oslo, Norway
Figure 7

Description: MR pelvis T1 fat sat axial plane Origin: de Lange C, Div. of Radiology and Nuclear Medicine, Rikshospitalet, Oslo University Hospital, Oslo, Norway
Description: MR pelvis T1 fat sat post contrast axial plane

Origin: de Lange C, Div. of Radiology and Nuclear Medicine, Rikshospitalet, Oslo University Hospital, Oslo, Norway