Radiology Case Reports 15 (2020) 424–426

Available online at www.sciencedirect.com

ScienceDirect

journal homepage: www.elsevier.com/locate/radcr

Case Report

Subperiosteal hematoma of the iliac wing presenting with leg weakness in a young adult footballer

John P. Hynes, MB, BCH, BAO[a,*], *Richard E. Downey, MB, BCH, BAO, MScSEM*[b], *Nicola Hughes, FRCR*[b], *Conor J. O'Keane, FRCPath*[a], *Eoin Kavanagh, FRCR*[a,b]

[a] *Department of Radiology, Mater Misericordiae University Hospital, Dublin, Ireland*
[b] *National Orthopaedic Hospital of Ireland, Cappagh, Dublin, Ireland*

ARTICLE INFO

Article history:
Received 19 November 2019
Revised 8 January 2020
Accepted 8 January 2020

Keywords:
Subperiosteal haematoma
Iliac bone
Femoral neuropathy
Magnetic resonance imaging
Sports medicine

ABSTRACT

We present the case of a 17 year old football player with a 2 week history of left leg weakness and difficulty weight-bearing. Magnetic resonance imaging revealed a well-circumscribed lesion deep to the left iliacus muscle. The patient proceeded to computed tomography-guided biopsy. The likely diagnosis was that of a subperiosteal haematoma of the iliac wing, which was exerting mass effect upon the left femoral nerve resulting in leg pain and weakness. Imaging was repeated at an interval of 1 month, at which time the lesion had almost entirely resolved. Subperiosteal haematoma of the iliac bone is a rare entity but should be considered as a potential diagnosis in young adults, particularly where there is a history of trauma or recent sports injury.

Introduction

Subperiosteal haematoma of the iliac bone is an extremely uncommon clinical entity, however nonetheless can cause leg pain and weakness, most commonly in adolescent patients with a recent history of sporting injury or other trauma [1]. Many of these lesions spontaneously resolve [2]. However they may also become chronic and ossify [3]. Surgical evacuation may be required in instances where the haematoma continues to expand or where there is significant neuropathy [2]. We describe a relatively typical case where the main imaging finding is a heterogenous lesion deep to the left iliacus muscle which subsequently spontaneously resolved.

Case report

In our case, a 17 year old football player presented with left leg weakness and difficulty weight bearing. He described mild pain however weakness was the primary concern. He could not recall any specific instant of relevant trauma, however occult trauma remains a possibility given Examination was

* Corresponding author.
E-mail address: johynes@tcd.ie (J.P. Hynes).
https://doi.org/10.1016/j.radcr.2020.01.019

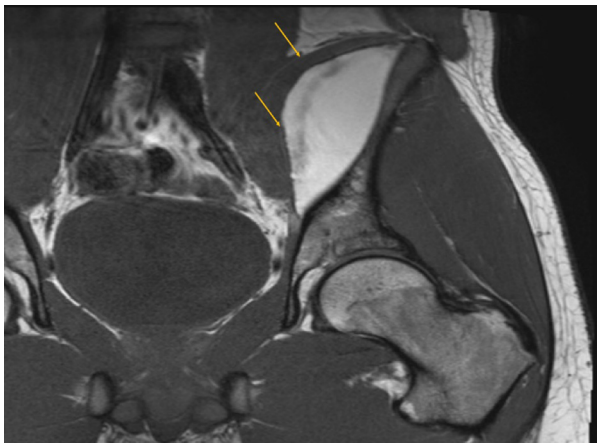

Fig. 1 – T1-weighted coronal image of the pelvis. The arrows denote a hyperintense, elliptical lesion between the left iliac bone and left iliacus muscle.

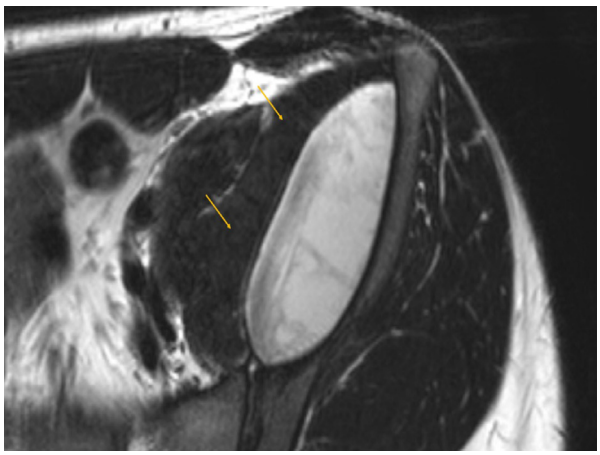

Fig. 2 – T2-weighted axial image of the pelvis. Again, the arrows denote a well-circumscribed, hyperintense, elliptical lesion between the left iliac bone and left iliacus muscle.

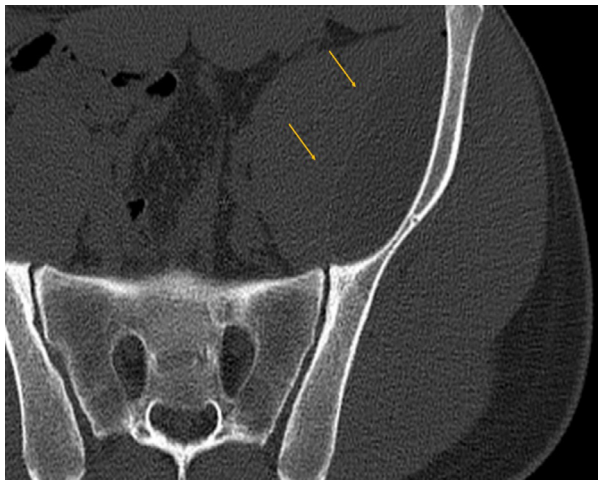

Fig. 3 – Axial noncontrast CT of the pelvis. The arrows denote a thin rim of peripheral high attenuation.

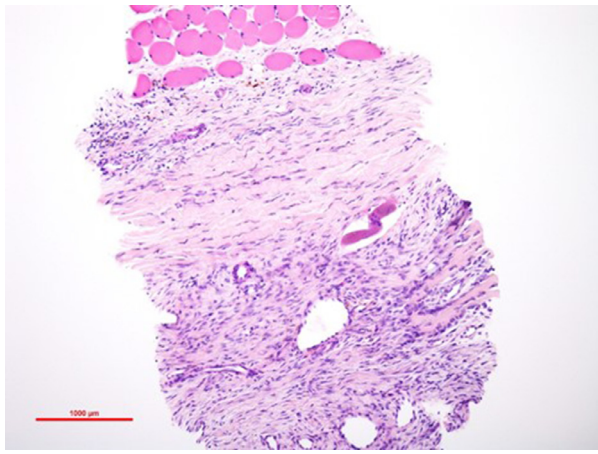

Fig. 4 – Core biopsy sample of the subperiosteal lesion reveals a reactive proliferation of fibroblasts and myofibroblasts, with irregular trabeculae of immature bone peripherally. There are scattered traces of haemosiderin peripherally also, in keeping with haemorrhage (hemotoxylin and eosin 100x stain).

significant for weakness in hip flexion and knee extension, and reduced patellar tendon reflex on the left. The patient denied any significant prior medical history.

MRI revealed a well-circumscribed retroperitoneal lesion deep to the left iliacus muscle, hyperintense on T1- and T2-weighted sequences (Figs. 1 and 2). On noncontrast CT prior to biopsy a rim of calcification was evident (Fig. 3).

CT-guided biopsy of the lesion was subsequently performed. Two 18-gauge core biopsy samples were obtained. There were no complications.

Hematoxylin and eosin stain revealed a reactive spindle cell proliferation of fibroblasts/myofibroblasts with somewhat vascular and myxoid stroma at the deepest part of the biopsy (Fig. 4). At the periphery, there were irregular trabeculae of immature/woven bone with osteoblastic rimming and traces of haemosiderin pigment in keeping with previous trauma/haemorrhage. There is no real evidence of maturation of bone in the biopsy indicating that the lesion was probably new. The histopathologic findings were most consistent with a subperiosteal haematoma. Myositis ossificans was a differential consideration however the absence of heterotopic bone formation makes this unlikely.

At a repeat MRI 1 month subsequently the lesion had almost entirely resolved (Fig. 5).

The patient subsequently made a full clinical recovery.

Discussion

Subperiosteal haematoma of the iliac bone is an uncommon lesion, typically described in children and adolescents [1]. The predilection for younger patients is thought to be due

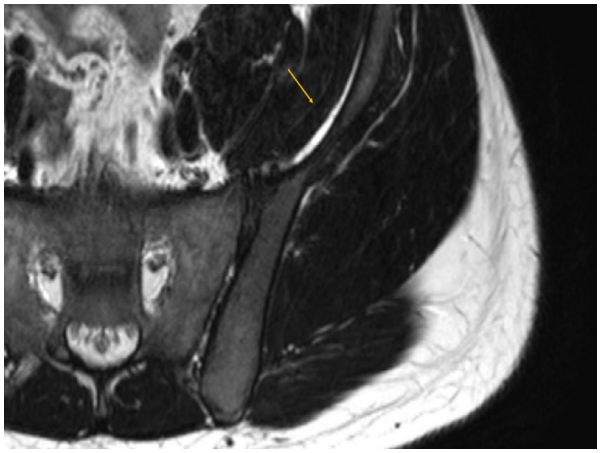

Fig. 5 – Axial T2-weighted MRI 6 weeks postpresentation showing near total resolution of the lesion.

to the relatively looser attachment of the periosteum to the underlying bone in younger patients, predisposing them to detachment and haemorrhage in the setting of trauma [4]. Presentation is often delayed due to the insidious nature of the lesion, with external signs of injury such as ecchymosis often absent [5]. While the majority of instances described in the literature result from direct trauma, it is worth noting that an avulsion-type mechanism for the development of an iliac bone subperiosteal haematoma has also been described following hyperextension trauma while kicking [6]. Chronic subperiosteal haematoma is most commonly detected incidentally in adults during cross-sectional imaging as a partially ossified lesion immediately medial to the iliac bone [3].

Imaging findings in subperiosteal haematoma are variable and are highly dependent on the amount of time the lesion has been present. In the acute setting, CT will demonstrate hyperdense content in keeping with haemorrhage [3]. Ossification typically begins peripherally, and may subsequently progress centripetally [5]. While lesions may entirely resolve spontaneously, in persistent cases they typically demonstrate a low attenuating centre with peripheral ossification.

MRI in acute cases typically characterises these lesions accurately, with hyperintense signal on T1-weighted imaging and heterogenous, intermediate T2 signal. Chronic lesions demonstrate intermediate signal on T1-weighted imaging and higher T2 signal than in the acute setting.

Iliac subperiosteal haematomas have a typical lentiform appearance, overlying the iliac bone and producing medial displacement of the iliacus muscle. It is important to distinguish a subperiosteal haematoma both from a cystic bone lesion (which might prompt further investigation) and also from an intramuscular haematoma of the iliacus muscle. The lentiform shape, typical pattern of ossification, and the integrity of the adjacent cortex help to exclude a primary osseous abnormality. Differentiating an intramuscular from a subperiosteal haematoma may be more difficult, however the adjacent psoas muscle is typically involved in the former and spared in the later [3]. Iliacus intramuscular haematomas are also typically seen in older patients, often those with haemophilia or on anticoagulant therapy [7,8].

In summary, while subperiosteal haematoma of the iliac bone is an uncommon clinical entity, it should be considered as a diagnosis in young patients with hip pain and leg weakness, particularly where there is a recent history of trauma or athletic injury.

REFERENCES

[1] Poplausky MR, Durrani H, Rozenblit G, Maddineni S, Crea G, Gastone G, et al. Traumatic subperiosteal pseudoaneurysm: a case report. J Trauma 2004;57:1115–18.

[2] Yumoto T, Joko R, Yamakawa Y, Yamada T, Naito H, Nakao A. Subperiosteal hematoma of the iliac bone: an unusual cause of acute hip pain after a fall. Am J Case Rep, 19; 2018. Published 2018 Sep 12 p. 1083–6. doi:10.12659/AJCR.910010.

[3] Guillin R, Moser T, Koob M, Khoury V, Chapuis M, Ropars M, et al. Subperiosteal hematoma of the iliac bone: imaging features of acute and chronic stages with emphasis on pathophysiology. Skeletal Radiol 2012;41:667–75. doi:10.1007/s00256-011-1267-3.

[4] Seigel RS, Williams AG, Hutchison JW, Wolter JR, Carlow TJ, Rogers DE. Subperiosteal hematoma of the orbit: angiographic and computed tomographic analysis. Radiology 1982;143:711–14.

[5] Wallace M, Kruse R, Eutsler EP, Averill LW. MRI findings of post-traumatic subperiosteal hematoma of the iliac bone with resultant femoral nerve palsy in an adolescent boy. Pediatr Radiol 2016;46:1350–3. doi:10.1007/s00247-016-3581-3.

[6] Weiss JM, Tolo V. Femoral nerve palsy following iliacus hematoma. Orthopedics 2008;3:178.

[7] Goodfellow J, Fearn CB, Matthews JM. Iliacus haematoma. A common complication of haemophilia. J Bone Joint Surg Br 1967;49:748–56.

[8] Niakan E, Carbone JE, Adams M, Schroeder FM. Anticoagulants, iliopsoas hematoma and femoral nerve compression. Am Fam Physician 1991;44:2100–2.