Incidental finding in a young man

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Diagnosis: Subperiosteal hematoma of the iliac bone.

Just as in our patient, subperiosteal hematomas of the iliac bone most commonly present as incidental findings in cross-sectional images [1]. While blunt trauma to the posterior part of the back or buttock is the most common cause, some of them are not caused by direct impact but rather by the hyperextension of the hip [1–3]. Rarely, it can be seen in patients with acetabular fracture [4]. The most widely accepted mechanism, is that of the periosteum of the inner iliac bone surface being avulsed during sudden forceful traction of the iliacus muscle [1, 5–7]. This theory is supported by the fact that subperiosteal hematomas develop mainly in children and teenagers, in whom the periosteum is more easily stripped from the bone than in adults [7, 8]. The injured nutrient vessels bleed, resulting in a hematoma.

Clinically, the patients are asymptomatic, or only demonstrate mild discomfort immediately after the injury [1]. Delayed painful hip movement can follow. Some patients experience neurological symptoms along the crural, lateralcutaneous, and genitofemoral nerve distribution, which is due to the close proximity of these nerves to the superficial fascia of the iliacus muscle [9].

The hematoma can resolve completely. On the other hand, calcification can develop over its surface within a few days. With age, the calcification progresses and forms a smooth shell. As the subperiosteal space is just a confined tight potential space, the hematoma acquires a typical biconcave lens

configuration, just like the subperiosteal hematomas develop in other sites. The hematoma can appear cyst like, or completely ossified, with a homogenous bone marrow pattern. Between the hematoma and the iliac bone is a smooth thin layer of ghost native cortex. The combination of all these features, when seen, is almost pathognomonic [1] and allows one to make a clear diagnosis confidently, in both CT and MRI images.

Due to its peculiar imaging features, subperiosteal hematoma of the iliac bone is rarely confused with other diseases. Its main mimic is the intramuscular hematoma of the iliacus muscle. Ascertaining whether the psoas muscle is involved, can help to differentiate between these two entities. Due to the anatomical connection between the two muscle sheaths, the body of the psoas muscle is most often involved in an intramuscular hematoma of the iliacus [10, 11]. In a subperiosteal hematoma of the iliac bone, the psoas muscle is spared. Intramuscular hematoma of the iliacus tends to occur in patients with a history of coagulopathy or anticoagulation, or rarely, as a consequence of a penetrating trauma. On the other hand, subperiosteal hematoma of the iliac bone mainly occurs in the healthy skeletal structure of an immature individual. When it is found in older patients, it is likely that the hematoma had developed early in life and was found incidentally during adulthood.

Besides being radiation free, MRI has various advantages over CT in the diagnosis of subperiosteal hematoma of the iliac bone. In the acute and subacute phases, MRI might be superior to CT in confirming the nature of the hematoma based on its signal characteristics. Bone marrow edema, like signal in bone contusion and occult fracture, can be readily detected in MRI. In patients presenting with neurological symptoms, an MRI might demonstrate a swelling of the affected nerve, and edema of the muscles innervated. In its chronic stage, the diagnosis of subperiosteal hematoma of

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the iliac bone can be confidently made in both the CT and the MRI. In an acute trauma setting, and when the patient is being fitted with non-MRI compatible metallic implants, a CT scan would ideally be the imaging of choice.

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