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Subperiosteal Hematoma of the Iliac Bone: An Unusual Cause of Acute Hip Pain after a Fall

Authors' Contribution:
Study Design A
Data Collection B
Statistical Analysis C
Data Interpretation D
Manuscript Preparation E
Literature Search F
Funds Collection G

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Conflict of interest: None declared

Patient: Female, 18
Final Diagnosis: Subperiosteal hematoma of the iliac bone
Symptoms: Hip pain
Medication: —
Clinical Procedure: —
Specialty: Orthopedics and Traumatology

Objective: Rare disease
Background: Subperiosteal hematoma (SPH) of the iliac bone is an extremely uncommon clinical entity that occurs mostly in young patients with a history of a recent fall or sports-related injury. Patients usually complain of severe hip pain after a fall, mimicking femoral neck fracture.

Case Report: An 18-year-old female was transported to our hospital complaining of pain in her left hip after falling on her buttocks while engaging in martial arts. Ultrasound of her left iliac region revealed a subperiosteal mass on the internal aspect of the iliac bone lifting the iliac muscle. SPH of the iliac bone was suspected, which was also evident on pelvis and hip magnetic resonance imaging. Repetitive ultrasound did not reveal hematoma expansion. She was discharged from the hospital the next day without femoral neuropathy.

Conclusions: Physicians should be aware of our report, which highlights a patient with the rare clinical condition of SPH of the iliac bone occurring immediately after a fall. The differential diagnosis of acute hip pain, which mimics femoral neck fracture, should be considered in young patients. Ultrasound of the iliac region may be useful in detection and further management of SPH of the iliac bone.

MeSH Keywords: Diagnosis, Differential • Hematoma • Wounds, Nonpenetrating

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Background

Subperiosteal hematoma (SPH) of the iliac bone is an extremely rare occurrence usually seen in adolescents after trauma [1–5]. It usually presents with hip or groin pain with numbness or weakness of the thigh on the affected side if the hematoma is large enough to compress the femoral nerve. Transcatheter arterial embolization of the affected vessels or surgical evacuation of the hematoma may be required to treat the expanding hematoma or femoral neuropathy [1,3,4]. Patients usually complain of severe pain in the hip or groin after a fall, symptoms mimicking femoral neck fracture. To the best of our knowledge, this is the first report describing the use of ultrasound to evaluate acute hip pain after a fall in a young woman and could be helpful in providing a definitive diagnosis and follow-up. Herein, we present a case of sudden hip pain following a fall in which ultrasound was useful in diagnosing SPH of the iliac bone and aiding in further management.

Case Report

An 18-year-old female, transported by an ambulance to the emergency department, complained of severe pain in her left hip after falling backward onto her buttocks while practicing martial arts. She had no significant medical history. On arrival, she held her left hip in the flexed position and had severe pain with active hip extension. She also had slight numbness in her left anterior thigh. Vital signs were stable. A physical examination did not reveal any obvious trauma such as bruising or swelling around her pelvic region. Moderate tenderness over the left groin, Scarpa's triangle, and greater trochanter were present. She had no abdominal or flank pain. Laboratory results showed hemoglobin level of 12.2 g/dL, platelet count of 260 000/ μ L, prothrombin time of 10.3 seconds, INR of 0.97, partial thromboplastin time of 30.8 seconds, and creatinine kinase of 59 U/L. X-ray of her left hip showed no obvious fractures. Iliopsoas injury was suspected, and ultrasound was used to examine her left iliac region. A subperiosteal heterogeneous lens-shaped mass was identified on the internal aspect of the left iliac bone lifting the iliac muscle, suggesting SPH of the iliac bone (Figure 1). As the symptoms of this injury mimicked femoral neck fracture, magnetic resonance imaging (MRI) examination was subsequently conducted to investigate for occult femoral neck fracture. Her diagnosis was also evident on pelvis and hip MRI. T2-weighted MRI showed a high intensity signal lenticular mass adjacent to the left iliac wing lifting the iliac muscle (Figure 2A, 2B). Occult fractures of the femoral neck or pelvic ramus were excluded.

She was managed conservatively without development of femoral neuropathy. Enlargement of the hematoma was not observed with close follow-up via ultrasound. The patient was

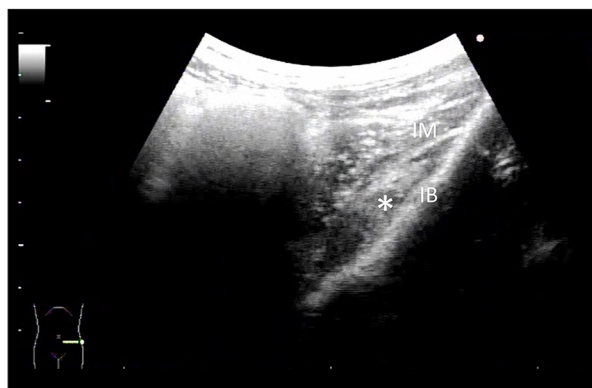


Figure 1. Ultrasound of the left iliac area revealing a subperiosteal heterogeneous lens-shaped mass (*) on the internal aspect of the iliac bone (IB) lifting the iliac muscle (IM).

discharged from the emergency department the next day without femoral nerve palsy. At the one-month follow-up, her left hip pain had almost resolved.

Discussion

SPH can result from traumatic and non-traumatic causes. SPH of the orbit, which occurs after facial trauma or can even be induced by emesis or the Valsalva maneuver, have been sporadically documented due to its clinical significance, presenting with proptosis or visual impairment [6]. The tibia or ankle are also involved after trauma or under predisposing conditions including neurofibromatosis or coagulopathy [7–9].

SPH of the iliac bone, which usually occurs in adolescents, is an extremely uncommon clinical condition presenting with hip or groin pain after trauma. Only a few cases have been reported. The condition usually manifests after a few days of progressive hip or groin pain with knee extension weakness and sensory loss of the anterior thigh if the hematoma is large enough to compress the femoral nerve following a fall or sports-related injury [1–5].

The periosteum is loosely attached to underlying bone in young patients, which leads to traumatic detachment of a part of the periosteum, damaging the nutrient vessels and resulting in SPH [4]. Direct fall onto the buttocks and hip hyperextension have been reported as causative mechanisms of injuries as in the case presented here [4,5].

The present case was unique because the patient was referred to the emergency department immediately after a fall due to severe hip pain without significant femoral neuropathy, implicating femoral neck fracture. Falling backward or hyperextension of the hip can cause iliopsoas hematoma manifesting

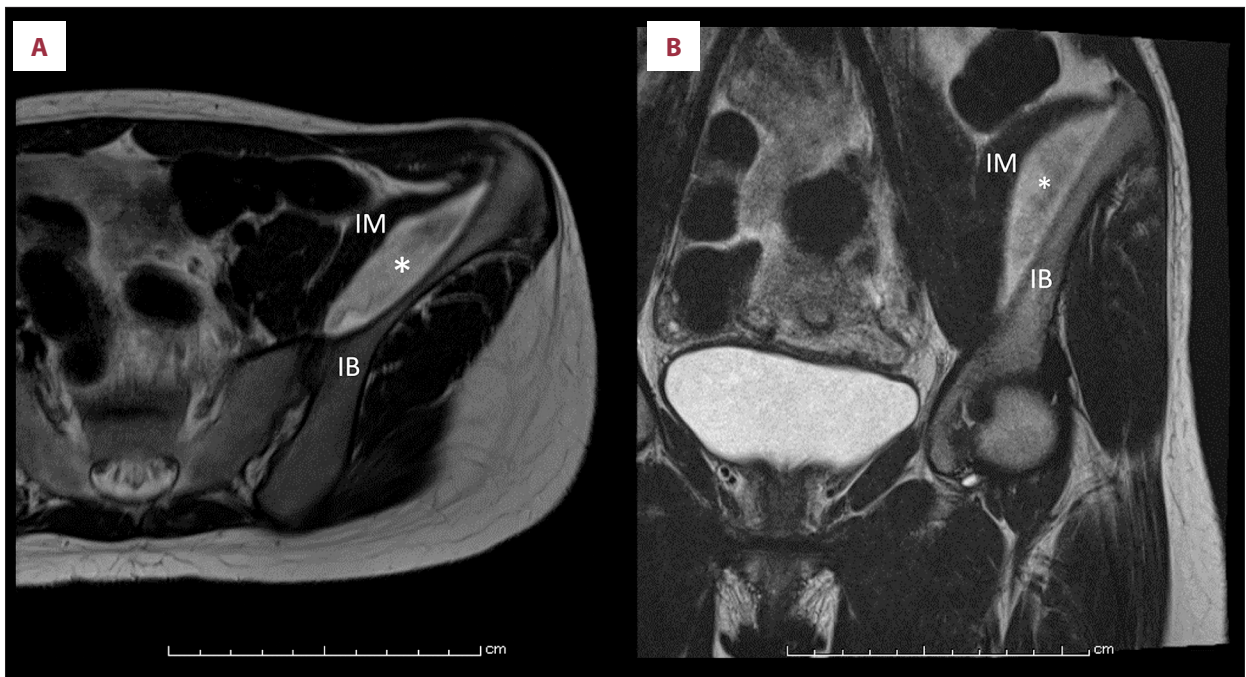


Figure 2. T2-weighted magnetic resonance imaging in the axial (A) and coronal (B) plane demonstrating the lenticular hematoma (*) lifting the iliac muscle (IM) away from the iliac bone (IB).

as hip or groin pain [10,11]. It is sometimes seen as a complication associated with anticoagulant therapy [12]. Point-of-care ultrasound may be a useful modality to determine the presence of iliopsoas hematoma, although additional examination, including computed tomography (CT) or MRI, should be considered to make the correct diagnosis as the condition is often obscured by bowel gas [11]. As it may mimic femoral neck fracture, MRI is superior to CT in terms of excluding occult hip fracture without exposure to radiation [13,14]. In the present case, point-of-care ultrasound identified periosteal lifting caused by periosteal hematoma in the iliac bone.

Contrast-enhanced CT is advocated in patients with progressive symptoms to detect the presence of contrast extravasation or pseudoaneurysm [1,3]. Transcatheter arterial embolization is effective in controlling the hemorrhage [1,3]. In the present case, further study was not performed since hematoma expansion was not observed with close follow-up via ultrasound. Surgical evacuation of the hematoma is mandatory in patients who develop femoral nerve palsy. Conservative management is sufficient for small nonexpanding hematoma and minimal neurological symptoms.

Conclusions

Although SPH of the iliac bone is an uncommon clinical entity, it may occur acutely after a fall, mimicking a femoral neck fracture. SPH of the iliac bone should be considered in young patients with acute hip pain following a fall or sports-related injury. Ultrasound of the iliac region may be an effective diagnostic tool to identify SPH of the iliac bone and help with further specific evaluation and follow-up to determine hematoma size.

Department and Institution where work was done

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Conflicts of interest

None

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