Crit Ultrasound J (2011) 3:59–61
DOI 10.1007/s13089-011-0065-4

CASE REPORT

# Diagnosis of traumatic iliopsoas hematoma using point-of-care ultrasound

**Toru Kameda · Masato Fujita · Isao Takahashi**

Received: 3 February 2011 / Accepted: 7 February 2011 / Published online: 24 February 2011


**Abstract** Case 1 involved a 24-year-old man who complained of severe right groin pain and difficulty of walking after falling to the ground while snowboarding. The patient manifested flexion hip contracture on the right side. Abdominal examination detected tenderness in the right lower quadrant. Point-of-care ultrasound identified swelling of the right psoas major, compressing the right kidney. Case 2 involved a 74-year-old woman who complained of severe left lower quadrant and left groin pain after falling down. This patient also manifested flexion hip contracture, on the left side. Abdominal examination detected tenderness mainly in the left lower quadrant and a palpable mass accompanied by tenderness, lateral to the left femoral artery. Point-of-care ultrasound identified swelling of the left psoas major and of the iliopsoas musculotendinous unit at the level of the groin. Point-of-care ultrasound after obtaining precise history and the physical examination is a very useful modality for the quick diagnosis of iliopsoas hematoma in the emergency rooms.

**Keywords** Trauma · Iliopsoas hematoma · Ultrasound

T. Kameda (✉) · M. Fujita
Department of Emergency Medicine,
Red Cross Society Azumino Hospital,
5685 Toyoshina, Azumino, Nagano 399-8292, Japan
e-mail: kamekame@pb3.so-net.ne.jp

I. Takahashi
Department of Emergency Medicine,
Teine Keijinkai Hospital, Sapporo, Japan

## Case reports

### Case 1

A 24-year-old man fell backward to the ground while snowboarding. He immediately felt right groin pain, but was able to continue snowboarding. Approximately 5 h after falling, he complained of severe right groin pain and difficulty in walking. He visited an emergency department on the very same day. No other significant medical history was elicited.

On examination, he was alert. Blood pressure was 149/75 mmHg, heart rate was 70 beats/min, and temperature was 37.6°C. He manifested flexion hip contracture on the right side, showing difficulty in extending the right hip due to the severe pain. Abdominal examination detected tenderness in the right lower quadrant. Results of neurological examination were unremarkable for both the lower limbs. Given his history and the findings of physical examination, iliopsoas hematoma was suspected.

Point-of-care ultrasound identified diffuse swelling of the right psoas major compressing the right kidney, compatible with a diagnosis of iliopsoas hematoma (Fig. 1). The internal echo was heterogeneous. Ultrasound was performed using curved 3.75-MHz phased-array transducers (SSA-240A; Toshiba, Tokyo, Japan). A subsequent CT confirmed the presence of iliopsoas hematoma.

The patient was treated conservatively and experienced no sequelae.

### Case 2

A 74-year-old woman developed severe left lower quadrant and left groin pain 2 days after falling down. The following day, she visited an emergency department. Her medical history included compression fracture of the lumbar

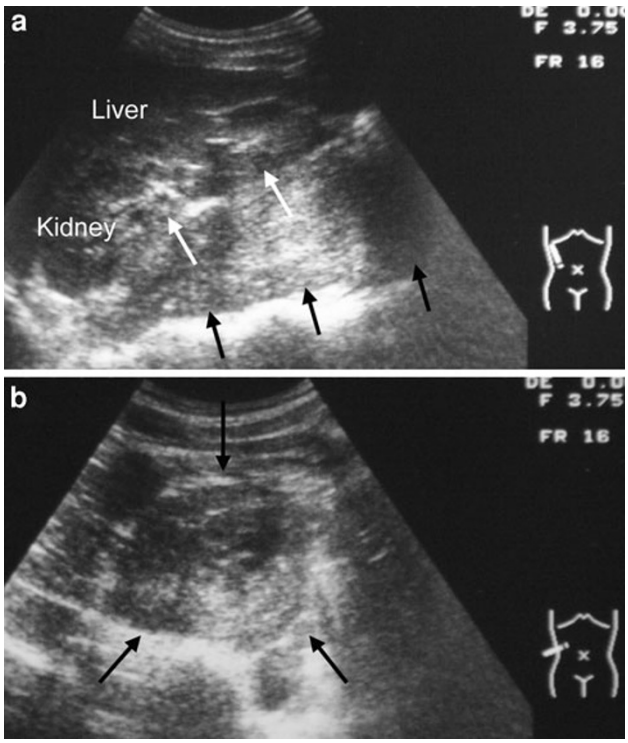


**Fig. 1** Longitudinal (**a**) and transverse (**b**) ultrasound of a right-sided iliopsoas hematoma (*black arrows*). The hematoma appears heterogenous. Swelling of the right psoas major compresses the right kidney (*white arrows*)

vertebrae, donor nephrectomy, and transurethral resection of a bladder tumor. She had no history of taking antiplatelet or anticoagulant agents.

On examination, the patient was alert. Blood pressure was 154/98 mmHg, heart rate was 79 beats/min, and temperature was 37.4°C. This patient also manifested flexion hip contracture, on the left side. Abdominal examination detected tenderness, mainly in the left lower quadrant, and a palpable mass accompanied by tenderness was identified lateral to the left femoral artery. The neurological examination yielded unremarkable results for both the lower limbs.

Point-of-care ultrasound identified diffuse swelling of the left psoas major adjacent to the spinal column and swelling of the iliopsoas musculotendinous unit at the level of the groin (Fig. 2). Ultrasound was performed using curved 3.8-MHz phased-array transducers (LOGIQ BooK XP; GE, Wisconsin, USA). Subsequent CT confirmed the presence of iliopsoas hematoma.

The patient was also treated conservatively.

## Discussion

Point-of-care ultrasound can rapidly provide emergency physicians with information complementary to the history

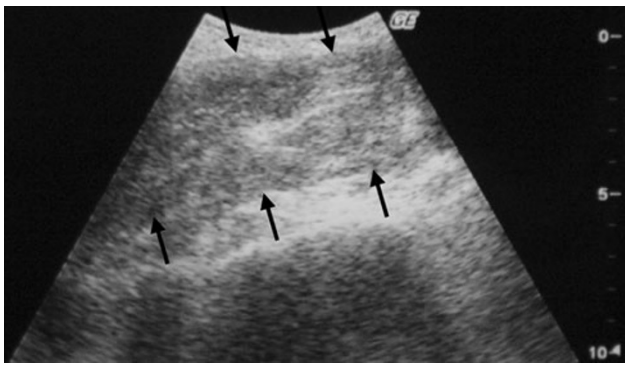

**Fig. 2** Longitudinal ultrasound performed on a left-sided iliopsoas hematoma (*black arrows*). The hematoma appears heterogenous

and results of physical examination. Various regions or lesions are considered as targets for point-of-care ultrasound in the emergency rooms. Use of ultrasound for the diagnosis of iliopsoas hematoma has been reported previously [1–6]. However, use in trauma patients for the diagnosis of this condition has rarely been reported in the English literature.

The main causes of iliopsoas hematoma include hemophilia [1, 3, 7, 8], anticoagulant therapy [5, 7, 9] and trauma [2, 4, 7]. Mechanism of traumatic iliopsoas hematoma is thought to involve muscle strain due to abrupt excessive extension of the hip joint [2]. In Case 1, this mechanism must have occurred. Patients with iliopsoas hematoma present with thigh, hip, and/or groin pain. They also frequently manifest characteristic symptoms of flexion hip contracture and femoral nerve paresthesia [8]. These clinical findings represent very useful information pointing to traumatic iliopsoas hematoma [7], but other lesions may be possible [1, 10]. This is why imaging is necessary to confirm the existence of this pathology.

We performed point-of-care ultrasound to scan the iliopsoas muscles, lower abdomen, hip joints, and the inguinal region immediately after taking a history of trauma, noting the characteristic symptoms and performing physical examinations in both the cases. Diffuse swelling of the psoas major was detected without difficulty. Comparison with the contralateral normal side was useful to confirm swelling [3]. The compartment of the psoas major can accumulate up to 10 times its original volume, and pain depends on tension within the compartment [9], so the psoas major must be sufficiently swollen to be easily detected on ultrasound when the pain is intense. Scanning the other regions mentioned above is also useful to detect other pathologies [1]. In our cases, no abnormal findings were detected. Ultrasound is useful to rule in swelling of the iliopsoas muscle. However, a negative finding is insufficient to exclude such swelling, as the iliopsoas muscles can be obscured by bowel gas or be too deep to be

scanned in some cases. In such cases, further evaluation by CT should be considered [7].

## Conclusion

Point-of-care ultrasound after obtaining a precise history and performing physical examination is a very useful modality for the quick diagnosis of iliopsoas hematoma in the emergency rooms.

**Conflict of interest** None.

## References


1. Graif M, Martinovitz U, Strauss S, Heim M, Itzachak Y (1987) Sonographic localization of hematomas in hemophilic patients with positive iliopsoas sign. AJR 148:121–123
2. Maffulli N, So WS, Ahuja A, Chan KM (1996) Iliopsoas haematoma in an adolescent Taekwondo player. Knee Surg Sports Traumatol Arthrosc 3:230–233
3. Kumari S, Fulco JD, Karayalcin G, Lipton R (1979) Gray scale ultrasound: evaluation of iliopsoas hematomas in hemophiliacs. AJR 133:103–106
4. Berlusconi M, Capitani D (1991) Post-traumatic hematoma of the iliopsoas muscle with femoral nerve entrapment: description of a rare occurrence in a professional cyclist. Ital J Orthop Traumatol 17:563–566
5. Holscher RS, Leyten FS, Oudenhoven LF, Puylaert JB (1997) Percutaneous decompression of an iliopsoas hematoma. Abdom Imaging 22:114–116
6. Dauty M, Sigaud M, Trossaërt M, Fressinaud E, Letenneur J, Dubois C (2007) Iliopsoas hematoma in patients with hemophilia: a single-center study. Joint Bone Spine 74:179–183
7. Lenchik L, Dovgan DJ, Kier R (1994) CT of the iliopsoas compartment: value in differentiating tumor, abscess, and hematoma. AJR 162:83–86
8. Ashrani AA, Osip J, Christie B, Key NS (2003) Iliopsoas haemorrhage in patients with bleeding disorders—experience from one centre. Haemophilia 9:721–726
9. Sasson Z, Mangat I, Peckham KA (1996) Spontaneous iliopsoas hematoma in patients with unstable coronary syndromes receiving intravenous heparin in therapeutic doses. Can J Cardiol 12:490–494
10. Fernandez-Palazzi F, Hernandez SR, De Bosch NB, De Saez AR (1996) Hematomas within the iliopsoas muscles in hemophilic patients: the Latin American experience. Clin Orthop Relat Res 328:19–24