VARIEY OF CLINICAL MANIFESTATIONS OF RUPTURE OF ILIOPSOAS MUSCLE BELLY

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Three patients are presented who sustained a lesion of iliopsoas muscle belly accompanied by intramuscular haematoma. Diagnosis was stated by means of CT scans. The accident such as fall of the stairs was the cause of the lesion in only two patients. The clinical manifestation of the illness significantly differed in symptoms such as: presence of subcutaneous haematomas, muscle tension, extent of pain, a drop of hemoglobin serum – level and others. The common feature of this mutilation was the maximal localization of the pain at the groin region of the affected side, difficulties in thigh dorsiflexion and external rotation as well as subsiding of symptoms after short-term conservative treatment. The characteristic of this rarely-diagnosed mutilation was analyzed on the basis of medical literature.

Key words: abdominal trauma, lesion of ilio-lumbal muscle, muscle tension

The iliopsoas muscle (IPM) consists of three agonist muscles: psoas major, psoas minor and iliacus.

Psoas major originates on the lateral side of the last thoracic and the first four lumbar vertebral corpora. Its deep layer has its initial attachment on the costal processes of all lumbar vertebrae. The terminal attachment of the psoas major muscle end on the trochanter minor.

The flat, thin and long psoas minor muscle usually lays on the iliopsoas muscle. It starts on the vertebral corpora of the XII thoracic and I lumbar vertebrae, and ends in the iliac fascia, iliopectineal arch (part of which it forms) and on the iliopubic eminence.

The iliacus muscle originates at the iliac fossa, and the terminal attachment ends at the trochanter minor of the femur, similarly to the iliopsoas major muscle (1, 2).

Clinically important acute conditions of the IPM include an inflammation of the trochanteric attachment and its synovial bursa (3, 4); an abscess (5); and a rupture of the muscle belly with a co-existent hematoma (6, 7, 8). The first condition affects the tendinous part of IPM and so lies beyond the scope of this paper.

Increased tension of IPM is usually associated with a blockade of the thoracolumbar transition resulting in decreased trunk rotation range. Tender IPM may produce signs similar to those found in pain of internal organs. These complaints are called “pseudovisceral”. Increased tension of IPM may also be associated with dysfunctional sacroiliac and iliac joints (2).

Belly injuries of IPM occur relatively rarely and their accurate diagnosis are facilitated by ever increasing availability of modern imaging techniques (3, 7, 8). As shown by Bui et al., after excluding pelvic fracture with an X-ray, MRI revealed IPM injuries in as little as 33 out of 4,862 patients with pelvic trauma (9). There is a wide variability in clinical pictures of such injuries. The localization of IPM next to the peritoneal cavity may suggest pathologies affecting intraperitoneal viscera.

Due to scarce reports on the abovementioned injury (a search of MEDLINE database
for the past 20 years revealed only seven papers covering the subject – 6, 8-13) we decided to describe our own observations basing on three cases of IPM injury.

**CASE REPORTS**

1. A 71-year-old male, K.R., patient’s history number 1233/08, was admitted to the emergency ward due to acute pain of the right mesogastric and inguinal regions. The pain had sudden onset and was accompanied by vomiting. The patient denied any injury. Physical examination revealed marked tenderness of the mentioned regions and muscle guarding. Kidney tenderness on fist percussion (a Goldflam’s sign) was present on the right side. The skin lacked any pathological lesions. The patient could barely rise the thigh (a positive psoas sign), and its external rotation aggravated the pain. A preliminary diagnosis was made of an acute appendicitis.

The patient had undergone a coronary arteries bypass grafting four years earlier, and because of that had been taking acenocoumarol (Sintrom®). He had also been treated of hypertension and circulatory failure. The lab test results were: Hb 12.5 g/dL, Hct 35.7%, MCH 35 g/dL, WBC 13.200 /µL, glycemia 168 mg/dL, INR 4.25, CRP 4.5 mg/dL, prothrombin index 27.17%. Six hours after the admission the nausea and complaints lost their severity and so, considering the low prothrombin index, we decided to postpone the urgent procedure. During observation an important decrease of hemoglobin concentration by 4 g/dL was noted without any signs of gastrointestinal bleeding.

Lab test on the 1st day of hospitalization: Hb 8.7 g/Dl, Hct 25.2%, MCH 32 g/dL, CRP 13.02 mg/dL, WBC 11,400 /µL. Other tests results, including general urine test, were within normal limits.

Due to an unclear clinical picture, and a suspicion of bleeding into an abdominal tumor or the retroperitoneal cavity, a computed tomography scanning was performed with a spiral multislice CT scanner using an algorithm for abdominal evaluation.

A lesion, 11.8 cm per 9.3 cm, of mixed density (56.7 Hounsfield’s units – H.u. – in average) was visualized in the right IPM. The lesion did not accumulate contrast. The right kidney was displaced forward by the lesion. The finding, possibly a post traumatic lesion of the IPM, should be differentiated from a weakly contrast accumulating neoplastic process (fig. 1).

Basing on the clinical picture and the CT scans a diagnosis was made of iliopsoas muscle belly hematoma due to its rupture. Bed regimen and analgesic treatment were instituted. No further decrease of hemoglobin concentration was observed. On day 7 the patient was discharged in a significantly better general state with the advice to maintain bed regimen for 10 days and continue myorelaxing and analgesic treatment.

8 weeks later a follow-up revealed a complete regression of the abdominal complaints; external rotation of the right lower limb flexed at the knee provoked only a slight pain; a CT scan showed cessation of the previously described hematoma.

In the right iliopsoas muscle, of 4.5 cm per 4.8 cm and the density of 44.5 H.u., a lesion is visible of the diameter of 4.47 cm and the density of 43.2 H.u. with a hypodense region in its center. The lesion does not accumulate contrast. None other pathologies are visible in the CT scan (fig. 2).

2. A 43-year-old male, P.T., patient’s history number 2624/08, was admitted to the ward for observation with a preliminary diagnosis of low back bruising after a fall from stairs. At the admission, physical examination revealed a moderate tenderness of the sacro-
lumbar region, marked tenderness of the abdominal wall especially in the left lower quadrant and left inguinal region. A Goldflam’s sign was present on the left side. The skin lacked any pathological lesions. External rotation of the left lower limb was only moderately painful, while flexing the hip was impeded by severe pain radiating to the inguinal and lumbar region.

X-rays in standard projections of the pelvis and thoracolumbar spine showed no skeletal injuries. Lab test on the 1st day of hospitalization: Hb 16.7 g/dL, Hct 48.2%, MCH 34.6 g/dL, CRP 2.33 mg/dL, WBC 6500 /µL. Other tests results, including general urine test, were within normal limits. Six hours after the admission the lab test results were the same, and so there was no decrease in hemoglobin concentration.

After 3 days of analgesic treatment in standard doses (ketoprofen, tramadol), the patient was still suffering and could hardly sit up. There were no changes in the lab tests results.

Due to an unclear clinical picture a CT scan was performed with a spiral multislice CT scanner using an algorithm for abdominal evaluation. The examination revealed a slight increase of the transverse dimension of the left IPM in comparison to the right one. Also, the left IPM was showed to have lower density of ca. 10 H.u. in comparison to the right one. The findings suggest an injury of the left IPM.

A belly injury of IPM was diagnosed. An analgesic treatment significantly alleviated the patient’s complaints. The patient was discharged on day 6 of observation. He failed to turn up for a follow-up. However, on a phone call 10 weeks after the accident the patient reports a complete regression of the complaints and resuming his occupation as a construction worker.

3. 58-year-old male, K.K., patient’s history number 3251/08, was admitted to the ward for observation with a preliminary diagnosis of bruising of the low-back, abdomen and femoral region of the left lower limb, also after a fall from stairs. At the admission, physical examination revealed weak muscle guarding in the hypogastrium (stronger on the left side), a moderate tenderness of the sacrolumbar region and abdominal wall, especially around the navel where a hematoma of 10 cm in diameter was present. An extensive hematoma was also found on the medial surface of the left thigh (fig. 3). The patient’s medical history was unremarkable and included no chronic treatment.

X-rays in standard projections of the left lower limb, pelvis and thoracolumbar spine showed no skeletal injuries. Lab test on the 1st day of hospitalization: Hb 14.7 g/dL, Hct 46.4%, MCH 38.6 g/dL, CRP 5.33 mg/dL, WBC 8,500 /µL. Other tests results, including general urine test, were within normal limits. The lab test results six hours after the admission: Hb 10.7 g/dL, Hct 42.2%, MCH 36.6 g/dL, WBC 10 500 /µL, CRP 15.4 mg/dL.

A large subcutaneous haematoma is visible on the medial surface of patient’s left thigh and around his navel.
Variety of clinical manifestations of rupture of iliopsoas muscle belly

External rotation of the left lower limb was severely painful, while rising the thigh was impeded by severe pain radiating to the inguinal and lumbar region as well as to the left knee joint. The clinical picture, although dominated by severe abdominal pain, was unclear and called for a CT scan. The examination was performed with a spiral multislice CT scanner using an algorithm for abdominal evaluation. CT scans revealed an asymmetry of the left IPM (7 cm per 7.9 cm) in comparison to the right side (4.7 cm per 5 cm). After contrast administration the density of the lesion increased by 10 H.u. The findings suggest an injury of the left IPM (fig. 4). No other pathologies were visible in the CT scans.

The patient was discharged after a 5 days. He turned up for a follow-up 6 weeks later. A CT scan of the pelvis was made which showed a complete remission of the lesions within left IPM and no other pathologies. The periumbilical hematoma reabsorbed totally, and the only sign of the thigh hematoma was skin discoloration.

Fig. 4. CT abdominal scan of the patient as on fig. 3 depicting the lesion of muscle belly of left iliopsoas muscle. The mutilation presents itself as an asymmetry of the size of contra lateral muscle group (7x7.9 cm to 4.7x5 cm respectively)

DISCUSSION

Belly injury of the iliopsoas muscle that affected the patient K.R. was unrelated to any trauma. The patient used to take anticoagulant drugs which may have caused intramuscular bleeding due to light unconscious trauma. Active bleeding was diagnosed basing on the decrease in Hb concentration eight hours after the admission. As an analogy to this case may serve the IPM bleedings that affect the hemophiliacs. Dauty described such hemorrhages in 5 hemophiliac patients over the period of five years (10). On the other hand, these bleedings may affect the elderly without concomitant diseases. Murakami reported two such cases, and in one of them the bleeding was fatal (9). A distinct group of patients are those with traumatic IPM belly injury. Available medical literature indicates that such injuries occur in sports associated with high load of the pelvic girdle, e.g. American football (14), taekwondo (15), cycling (13). The two presented patients sustained common traumatic injuries (a fall from stairs). However, their mechanism was unrelated to a sudden rotational lower limb abduction.

The clinical pictures differed importantly. Only one of the patients (P.T.) complained of limited movement range of the lower limb. Also in only one patient (K.K.) a periumbilical and thigh hematoma developed (the latter as a result of gravitational dripping along the muscle sheath). All three clinical pictures shared pain of greatest intensity at the inguinal region, a sudden onset of symptoms and their gradual regression over the period of just a few days, with full recovery obtained within 2 months.

CONCLUSION

Patients under observation due to unclear abdominal pain should be differentially diagnosed for the muscle belly injury of the iliopsoas muscle.

REFERENCES


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COMMENTS

The diagnostic modality that univocally determines degree and type of MPL injury is magnetic resonance imaging. It causes monitoring of evolution of lesions in soft tissues to be more specific. In many cases of posttraumatic abdominal and trunk pain, injury of MPL bellies or attachments and/or erector spinae, may contribute. Possibly accurate diagnostic workup of these injuries with imaging diagnostic modalities (MRI) in the process of differential diagnosis of symptoms that are very similar, will lead to utilization of “targeted” treatments.

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