CASE REPORT

Iliacus haematoma causing femoral nerve palsy: an unusual trampolining injury

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Accepted 14 July 2015

SUMMARY

We report the case of a 15-year-old boy who presented to accident and emergency following a trampolining injury. Initially, the patient was discharged, diagnosed with a soft tissue injury, but he re-presented 48 h later with worsening low back pain and neurological symptoms in the left leg. Subsequent MRI revealed a left iliacus haematoma causing a femoral nerve palsy. The patient was managed conservatively and by 6 months post injury all symptoms had resolved. This is the first reported case of an iliacus haematoma causing a femoral nerve palsy, after a trampolining injury. We believe this case highlights to our fellow clinicians the importance of a detailed history when assessing patients with trampolining injuries to evaluate the true force of injury. It also acts as a reference for clinicians in managing similar cases in future.

BACKGROUND

The use of trampolines is increasing, along with the incidence of injuries associated with their use. A careful history is required to ascertain the exact mechanism of injury, as impacts can be of greater magnitude than immediately appreciated. This case highlights one such injury—the first reported case of an iliacus haematoma with associated femoral nerve palsy following a trampolining accident. This case serves to highlight this rare but potential injury, to encourage clinicians to be detailed in their history taking when assessing patients with trampolining injuries and to discuss the management of such cases.

CASE PRESENTATION

A 15-year-old boy presented to the accident and emergency (A&E) department with pain in his left leg and back following a fall onto his lower back while trampolining. The patient was on the trampoline with another child and came down onto his back while the trampoline was already stretched. This meant that he hit the trampoline floor from a height of over 2 m.

On presentation, examination revealed some tenderness around the lower back. No neurological deficit was identified. He was able to straight leg raise with discomfort and could bear weight on the left leg, with a limp. He was fit and well, and, significantly, had no personal or family history of bleeding disorders. He did not take any regular medication. To further investigate his symptoms, radiographs of lumbar spine and pelvis were obtained, which did not identify any bony injury.

The patient was therefore discharged with a diagnosis of a soft tissue injury.

Over the following 48 h the patient's pain worsened, requiring opiate analgesia, and he therefore re-presented to A&E. On examination, his left leg was held flexed at the knee and hip joint, and slightly externally rotated. He had no bony tenderness. All of his leg movements induced pain, with the most aggravation caused by hip abduction. Neurological examination revealed reduced crude sensation in the distribution of L3/4. Full assessment of the myotomes was difficult due to pain and the resting position of the limb, but knee extension was weak compared to the contralateral side. Ankle and toe movements were normal with full power. The patella tendon-quadriceps reflex was absent on the affected side but the ankle reflex was normal.

Repeat plain radiographs showed no bony injury to the lumbar spine, pelvis or hips.

The patient was admitted for neurological observation, analgesia and further investigation.

INVESTIGATIONS

An MRI was performed, which revealed the diagnosis: iliacus haematoma causing femoral nerve palsy (figure 1). A full-blood count and coagulation screen were performed, which did not show any evidence of clotting disorders.

DIFFERENTIAL DIAGNOSIS

In this case, the following differential diagnoses were considered prior to definitive investigation and should be considered in any adolescent presenting with low back/hip pain with or without altered neurology following trauma:

Soft tissue injury, vertebral fracture, femoral neck fracture, pelvic fracture, slipped upper femoral epiphysis, lumbar disc herniation and intramuscular haematoma.

Figure 1 MRI showing left iliacus haematoma.

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To cite: Chambers S, Berg AJ, Lupu A, et al. *BMJ Case Rep* Published online: [please include Day Month Year] doi:10.1136/bcr-2014-208758

The possibility of occult fracture, which is not visible on plain radiography, should not be overlooked.

As with all cases, a thorough clinical history and examination will guide the index of suspicion to specific diagnosis. Clinicians will then need to decide if further investigations are required and which investigations would be best in order to obtain a definitive diagnosis.

In this case, specifically, the neurological findings were strongly suggestive of femoral nerve dysfunction. The roots of the femoral nerve are L2, L3 and L4 with mixed motor and sensory innervation. Cutaneous innervation is provided to the corresponding dermatomes over the anterior and medial thigh, and via its terminal branch, the saphenous nerve, the medial aspect of the shin and foot, and motor innervation to the quadriceps muscle, which function to extend the knee. As a result of the findings in this case, it was decided to perform an MRI to assess for compression of the femoral nerve.

TREATMENT

The patient was treated conservatively with analgesia. Neurology was monitored hourly for the first 24 h after admission, then 2 hourly for the following 48 h. Clear instructions were also given to the patient to report any changes in his symptoms if they occurred at any interim periods. He was discharged, at 5 days post admission, when the pain was sufficiently controlled with oral analgesia.

OUTCOME AND FOLLOW-UP

The patient was followed up in clinic and repeat MRI was performed at 3 months post injury. The MRI showed good resolution of haematoma (figure 2). At 6 months post injury, all pain had resolved, the patient was mobilising normally and no neurological deficit persisted.

DISCUSSION

Femoral neuropathy caused by iliacus haematoma is well described in the literature but this is the first reported case of traumatic iliacus haematoma with femoral nerve palsy secondary to a trampolining accident. More commonly, cases are reported secondary to spontaneous bleeds in patients with clotting disorders; either inherent or iatrogenic.^{1–3} Further cases have been reported as a complication of hip arthroplasty, following intrapelvic perforation of the medial acetabular wall.^{4–5} Surgery to the iliac crest for microvascular flap⁶ and bone graft⁷ harvest have also both been associated with haematoma causing nerve palsy. Trauma in a patient with normal clotting parameters is a much rarer clinical entity, with just 12 cases reported in the

literature.⁸ The mechanism of injury in six of these cases was a direct blow to the back.

The use of trampolines is increasing, along with the incidence of injuries associated with their use.^{9–10} One study showed that 74% of injuries occurred when more than one person was on the trampoline.¹¹ In this case, a careful history elicited that the trampoline was at maximum downward stretch resulting in a greater impact than one may first consider. This case therefore highlights to clinicians assessing patients with trampolining injuries the importance of a detailed history in association with a high index of suspicion for occult injuries.

There is no clear consensus in the literature as to the optimum management of traumatic iliacus haematomas. Both operative and non-operative treatments have been met with high success rates for nerve recovery. In this case, we opted for conservative management, as the patient's neurological symptoms did not progress further once he was admitted. We also felt that since the presentation with neurological deficit was at 48 h post injury, the bleed would likely be tamponaded if there was no further progression and therefore surgical intervention risked destabilising the patient.

We present a case demonstrating that immediate surgical intervention is not essential in the management of iliacus haematoma causing femoral nerve palsy.

Learning points

- ▶ All trampolining injuries should be assumed to be high energy and patients managed appropriately for this.
- ▶ Clinicians should be aware of occult injuries secondary to trampolining accidents.
- ▶ In patients with an iliacus haematoma and neurology deficit, conservative treatment can be considered if there is no progression in the symptoms evident at the time of presentation.
- ▶ This case provides prognostic information with symptoms of femoral nerve palsy after a conservatively managed iliacus haematoma resolving in 6 months.

Competing interests None declared.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

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Figure 2 MRI at 3 months showing good resolution of previous left iliacus haematoma.

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