CASE REPORT

Circumflex femoral vein thrombosis misinterpreted as acute hamstring strain

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The case of a 24-year-old female professional, long-distance runner who presented with acute proximal posterior thigh pain is reported. History and clinical findings were consistent with acute hamstring strain but MRI demonstrated circumflex femoral vein thrombosis. This is the first case of proximal posterior thigh pain caused by circumflex femoral vein thrombosis reported in the literature. Doctors dealing with sports injuries should be aware of this clinical entity that mimics hamstring strain.

Hamstring strain is one of the most common injuries seen in sports participants and can debilitate an athlete. The diagnosis is usually based on clinical grounds. We report on a case with acute hamstring strain symptoms that eventually proved to be circumflex femoral vein thrombosis. The sports physician should include this clinical entity in the differential diagnosis of posterior thigh pain.

CASE REPORT

A 24-year-old woman, who is a professional long-distance runner, presented with left proximal posterior thigh pain. The onset of pain was acute, and occurred during assisted hamstring stretching after practice. On clinical examination, local tenderness was found over the left ischial tuberosity. Pain was also elicited while placing the hamstring under stretch (straight leg raise >45°) and during hamstring contraction against resistance. Our diagnosis, based on history and clinical findings, was acute hamstring strain. Radiographic evaluation of the ischial tuberosity was normal. MRI studies were scheduled to determine the grade of injury and the time taken to return to sports.

Treatment was started immediately and the patient followed our treatment protocol for hamstring strain. Anti-inflammatory medication for a short period of time (3–5 days) and the first phase of the rehabilitation regimen were initiated. Our treatment goal for the patient, at this phase, was to regain pain-free, full range of motion. Rest, ice, crutches, ultrasound and laser were used to achieve this goal.

Five days after injury, MRI (fig 1) demonstrated alterations in circumflex femoral vein thrombosis signals and no abnormality of the hamstring muscles. The thrombus was detected in contrast-enhanced T1-weighted fast low-angle shot images, along with inflammation of the vessel wall. The localisation of the thrombus, under the great gluteus muscle and next to the ischial tuberosity, was consistent with the patient's pain. Consequently, the patient was referred to an angiosurgeon for consultation. The patient followed conservative treatment and the symptoms resolved within 10 weeks. A second MRI was obtained at that time with similar findings (no thrombus propagation), and the patient was discharged. The patient was able to participate fully in sports 3 months after the injury.

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DISCUSSION

Hamstring strains are among the most common injuries in sports that involve sprinting and jumping.^{1–2} Moreover, hamstrings are by far the most frequently injured muscles.³ However, not all posterior thigh pain is the result of hamstring strain. Upton *et al*⁴ stated that most cases of posterior thigh pain have a basis within the muscle complex, but, in 15% of cases, associated factors are involved. Such factors may include the lumbar spine, sacroiliac joint, neural tension, ischiogluteal bursa, piriformis syndrome, compartment syndrome of the posterior thigh, bone tumours and stress fractures.

In most cases of hamstring strain, the diagnosis is clear and based on history and physical examination. Our patient's history and clinical findings were consistent with acute hamstring strain. Askling *et al*⁵ reported two different scenarios for acute hamstring strains. The sprinter was injured while running at maximal speed, whereas the dancer suffered the hamstring strain during slow stretching. Moreover, he noticed that for the sprinter the localisation of the pathology, demonstrated by MRI, was in the distal semitendinosus, whereas in the dancer the proximal tendon of semimembranosus was involved.

We do not routinely use MRI for hamstring strains in our clinical practice. However, our patient's age (24 years) and the localisation of pain raised the question of ischial tuberosity avulsion or proximal tendon rupture. It has been reported that the ischial apophysis may suffer avulsion from the innominate bone from around puberty up to 25 years of age, by which time it is generally fused.⁶ In such a scenario, surgical intervention is mandatory in order to avoid knee flexion weakness, especially in professional athletes and in the active population. MRI has been shown to be sensitive for diagnosing hamstring strain injuries,⁷ and an excellent tool to determine objectively the grade of injury and subsequently the time taken to return to sports.⁸

Parellada *et al*⁹ highlighted the critical role that MRI may play in diagnosing unsuspected lower-extremity deep venous thrombosis (DVT). Despite venography being the modality of choice, MRI is a non-invasive technique that is reliable and equivalent to ultrasound for the diagnosis of DVT.¹⁰

No other cases of circumflex femoral vein thrombosis have been reported in the English literature. Therefore, we cannot compare our patient's symptoms with other cases. The fact that this clinical entity presented with acute hamstring strain symptoms, along with undiagnosed cases of posterior thigh pain, potentially signifies that some cases have been misinterpreted. Undoubtedly, further studies are needed to confirm this hypothesis and to determine the rate of DVT as a cause for posterior thigh pain. In conclusion, we believe that circumflex femoral vein (and other deep veins in the thigh) thrombosis

Abbreviation: DVT, deep venous thrombosis

Figure 1 MRI showing alterations in circumflex femoral vein thrombosis signals (arrow).

should be included in the differential diagnosis of posterior thigh pain.

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What is already known on this topic

- Hamstring strain is the most common cause of posterior thigh pain.
- Some cases of posterior thigh remain undiagnosed.

What this study adds

Circumflex femoral vein (and other deep veins in the thigh) thrombosis should be included in the differential diagnosis of posterior thigh pain.

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