



# Paraspinal and Iliopsoas Edema as a Marker of an Iliofemoral Thrombosis: Case Series Report

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## Abstract

Isolated paraspinal and iliopsoas edema is a rare MRI finding that may occur in a wide variety of conditions. Some of them do not need emergency care and could be well diagnosed by additional symptoms. Isolated thrombosis of iliac veins is a life-threatening condition that may cause pulmonary embolism, leg gangrene or post thrombotic syndrome if not recognized in early stages. In this case series report authors describe two cases when MRI findings of paraspinal and iliopsoas muscles edema was crucial for diagnosis of isolated iliac vein thrombosis before complications occur.

**Keywords:** Iliac thrombosis, Iliopsoas edema MRI, Paraspinal muscles edema MRI

## Introduction

Isolated iliac thrombosis (IIT) is a condition associated with increased risk of severe complications, such as pulmonary embolism or leg gangrene. Most common symptoms of iliac thrombosis are leg pain, swelling of the entire leg, and may be associated with back pain, abdomen and flank pain. In some cases, described patients do not have all range of symptoms that significantly impede the diagnostics of this condition, for example, there are some cases when IIT debuted with only abdominal pain that lead to misdiagnosis and even surgical interventions.<sup>1</sup> In this report authors describe two cases of unsuspected IIT with non-typical complaints that mimic lumboischialgie and that was revealed after lumbar MRI findings.

## Case Report

### Case 1

A 28-year-old man visited the Pain Clinic Department with complaints of the back pain that was radiated toward both posterior and medial hip surface that occurred 3 weeks ago without histo-

ry of trauma, fever or any other dangerous “red” signs. The patient had a history of bronchial asthma that did not need corticosteroid therapy and no other specific past medical history. Patient was treated for 3 weeks by a general practitioner with NSAIDs and no significant pain relief was achieved. Patient was referred to lumbar MRI. No herniated discs were found but there were signs of swelling of paraspinal and iliopsoas muscles: increased signal intensity in left iliopsoas, large lumbar, internal obturator muscles on STIR MRI (Figure 1). Further doppler US of deep veins, including iliac veins, was provided with the sign of floating thrombosis of the left common iliac vein. Patient was immediately referred to the cardiovascular surgeon for further treatment. After 2 weeks of surgical and anticoagulant treatment the patient returned to the scheduled meeting to the general practitioner without any complaints.

### Case 2

A 90-year-old woman presented to the Pain Clinic Department for pain in the left side of her back without any radiation or other symptoms. She has suffered from chronic non-specific low back

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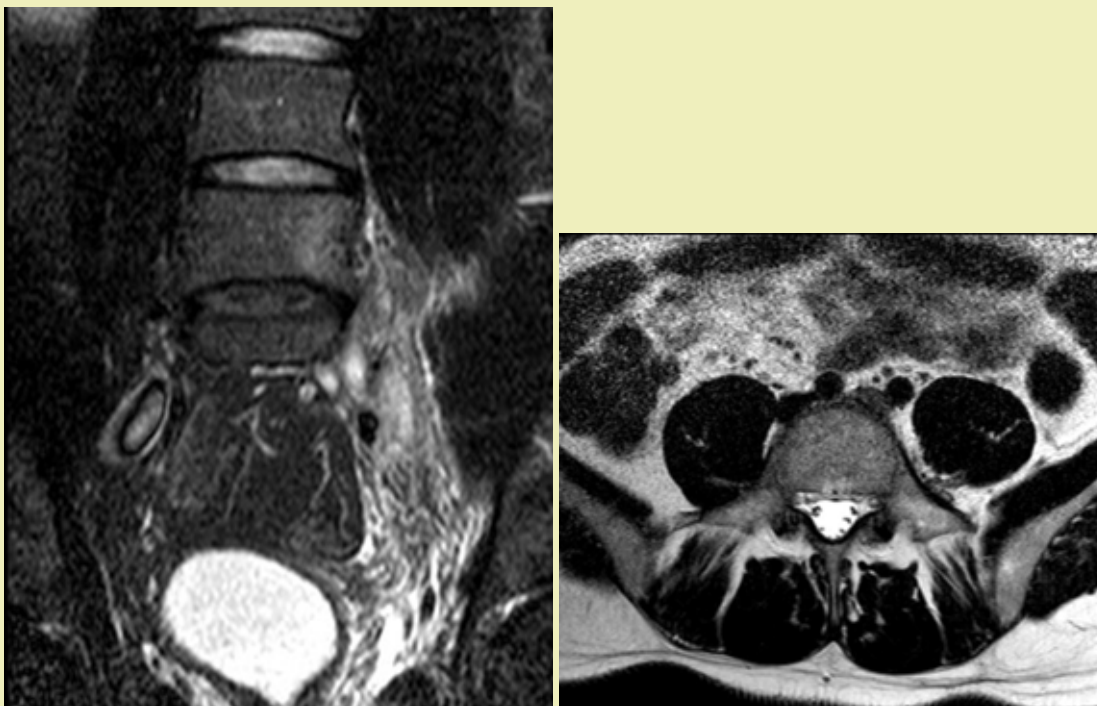
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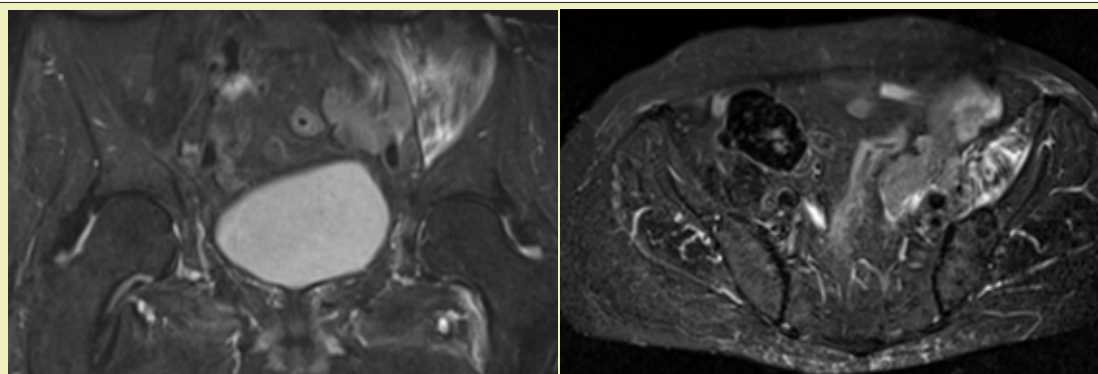
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pain for many years, and conservative or interventional pain management has previously been effective in relieving the pain. The current exacerbation lasted several days and differed from the previous ones only by a higher level of pain intensity. Body temperature 36.6, other vital signs are normal. She had a history of high blood pressure, but there were no other significant medical conditions in her medical history. There was no previous trauma, fever, corticosteroid use, night pain, radiating pain, or any other red flags. She was referred for an MRI examination of the hips with axial and coronary T1-WI, T2-WI with fat saturation, or STIR, which revealed

edema in her left iliopsoas, sartorius, pectineus, short adductor and external obturator muscles with higher signal intensity in STIR (Figure 2). No signs of lumbar spine or muscle infection were found. These changes were not detected in the previous MRI done a year ago. The patient was referred for Doppler ultrasound and revealed signs of partial thrombosis of the left internal iliac vein. During conservative treatment two weeks later, a follow-up MRI examination two weeks later revealed an injury to the tendon of the iliopsoas muscle in progress, which clarified the diagnosis.



**Figure 1:** Case 1. 28-year-old patient. Coronal, STIR (A) and axial T2-weighted (B) MRI demonstrating the increased signal intensity of left iliopsoas, large lumbar, internal obturator muscles.



**Figure 2:** Case 2. 90-year-old patient. MRI: STIR, coronal (A) and STIR axial (B). MRI demonstrating the increased signal intensity of left iliopsoas, sartorius, pectineus, short adductor and obturator externus muscles.

## Discussion

Proximal deep vein thrombosis, as an iliac vein thrombosis is a rare condition, associated with a higher risk of life-threatening complications. Usually it is spread from lower extremity deep veins

to the proximal veins and well-diagnosed by clinical signs and Doppler US signs. However, atypical clinical features and absence of swelling in the leg may lead to misdiagnose this condition. Routine Doppler US may not reveal this problem because it is usually done

more distally and isolated iliac vein thrombosis may remain undetected.<sup>2</sup>

The back pain often accompanies iliac thrombosis but it is usually not the main symptom, like hip pain and swelling. Isolated back pain is rarely the only sign of thrombosis.

Both patients could have been misdiagnosed if MRI had not have been provided.

Isolated paraspinal and iliopsoas muscles edema is a non-specific sign that is not frequently seen but may be the sign of different conditions. The most common causes of psoriasis are infection both primary due to *Staphylococcus aureus* or other Gram-negative bacteria after injections or other injuries mostly in immunosuppressed patients; and secondary to dissemination of pathogenic microorganisms from other organs infection diseases: kidney abscess, gastrointestinal inflammatory diseases, osteomyelitis of bones and other conditions.<sup>3</sup> Mehta et al. declare high role of the presence of paraspinal edema and evaluation its "superior inferior paraspinal edema ratio" with high level of specificity and sensitivity (96% and 75% respectively) in differential diagnosis of spondylodiscitis from degenerative changes of lumbar spine.<sup>4</sup>

Trauma or injury could be the cause of paraspinal or iliopsoas isolated swelling or inflammation: paraspinal muscle edema may be a predictor of the presence of transverse process fracture that is especially important in patients with severe back pain after traumas and no signs of compression lumbar spine fracture.<sup>5</sup> In elderly people spontaneous tendon tear is possible, even without reports of previous injury, which accompanies some high signal intensity of the iliopsoas muscle proximally to the injury.<sup>6</sup>

Swelling of iliopsoas or paraspinal muscles may occur due to malignancy - primary tumor or metastasis. But one of the rare causes of iliopsoas or paraspinal muscle edema is focal myositis. It is a benign inflammatory condition of unknown etiology.<sup>7</sup> This condition may be misdiagnosed with sarcomas, deep vein thrombosis and infection process but unlike the above It is characterized by spontaneous improvement and effectiveness of NSAIDs. Sometimes it may be recurrent.<sup>8</sup> In case of its good course and prognosis, it should be distinguished from infection or thrombosis.

Less frequent causes of iliopsoas and paraspinal muscle edema are paralysis atrophy, rhabdomyolysis, retroperitoneal fibrosis or foreign body.

The role of MRI in the diagnosis of thrombosis is usually limited to MRI venography.<sup>9</sup> But there are some reports when MRI was helpful to diagnose deep vein thrombosis. Parellada<sup>10</sup> declared that MRI findings of muscle edema-like changes in patients' primary thought to have musculoskeletal conditions can be the marker of deep venous thrombosis. They described four such cases, in which

deep venous thrombosis was initially unsuspected and the final diagnosis was based on the MRI findings.

This allows us to suggest that similar changes in the form of muscle edema in another anatomical region, namely in the region of the paraspinal muscles and iliopsoas muscle, may also be a marker of deep vein thrombosis in this anatomical region. In one case report by Björgell,<sup>2</sup> the patient underwent MRI scanning after the isolated internal iliac thrombosis was diagnosed by Doppler US. This MRI finding showed edema in the region around the iliopsoas muscle.

## Conclusion

MRI findings of edema-like changes in paraspinal and iliopsoas muscles may be a sign of different conditions, but some of them, as an isolated iliac vein thrombosis may lead to severe complications until death. It is difficult to say whether muscle swelling is a consequence of thrombosis, because vein thrombosis can be a consequence of infection or injury. Anyway, these conditions must be included in differential diagnosis in patients with isolated edema in paraspinal and iliopsoas muscles.

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## Conflicts of Interest

The authors declare no conflict of interest.

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