

# A Massive Tuberculosis Abscess at the *Erector Spinae* Muscles and Subcutaneous Tissues in a Young Man

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## خراج درني هائل في العضلات الناصبة للظهر والأنسجة تحت الجلد عند رجل شاب

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الملخص: مرض الدرن (TB) هو عدوى حبيبية مزمنة يمكن أن تظهر على شكل غير نمطي. إصابته للعضلات فقط شيء نادر جدا. في هذا المقال نقدم تقريرا عن رجل يبلغ من العمر 25 عاما وجد عنده تورم كيسي ضخم على الجانب الأيمن من ظهره، ممتد من نهاية الصدر إلى المنطقة الألوية من الظهر. هذا الرجل تعرض لفترة لأحد أصدقائه الذي كان يشبهه في إصابته بالسل. أظهر التصوير بالرنين المغناطيسي (MRI) أن أصل الكيس كان من العضلات الناصبة للظهر وأظهرت نتيجة السوائل المسحوبة من الكيس عصيات الحمض الصائمة (بكتريا السل). اختفى التورم بعد العلاج بالأدوية المضادة للسل. إصابة العضلات بالسل هي حالة نادرة جدا. وفي مريضنا هذا، أكدت تقارير الموجات فوق الصوتية والتصوير بالرنين المغناطيسي إصابة العضلات و منطقة تحت الجلد دون إصابة العظم. كتبت هذه الحالة لزيادة وعي الأطباء بخصوص السل الذي يصيب الأنسجة الرخوة. فعلى الرغم من أنه أمر نادر الحدوث، الا انه من الممكن رؤية وتشخيص حالات مماثلة في المستقبل.

مفتاح الكلمات: الدرن: العضلات: الخراج: الكيس: تقرير حالة: عمان.

**ABSTRACT:** Tuberculosis (TB) is a chronic granulomatous infection which can present in an atypical form. Isolated muscle involvement is very rare. We report a 25-year-old man who presented with a massive cystic swelling on the right side of his back, extending from the lower thoracic to the gluteal region. He had a history of contact with a friend who was suspected of having TB. Magnetic resonance imaging (MRI) showed that the origin of the cyst was from the *erector spinae* muscles. The result of a fluid aspirate showed acid fast bacilli. The swelling disappeared after treatment with anti-tuberculous medications. Muscular involvement in TB is very rare. In our patient, the reports of an ultrasound and MRI confirmed isolated muscle and subcutaneous involvement without bony lesions. This case is reported to increase physician awareness regarding soft tissue TB. Although it is rare, similar cases may be seen in the future.

**Keywords:** Tuberculosis; Muscle; Abscess; Cyst; Case Report; Oman.

**T**UBERCULOSIS (TB) IS A CHRONIC granulomatous infection caused by *Mycobacterium tuberculosis*. It can present in atypical forms, such as a herniated intervertebral disc, granuloma that mimic a tumour, or a TB muscle abscess.<sup>1</sup> Occasionally these abscesses may appear in the supraclavicular, gluteal, *psaos*, or groin regions.<sup>1</sup> Isolated muscle involvement is very rare.<sup>2,3</sup> We present a case of a massive TB abscess of the *erector spinae* muscles extending to the adjacent

subcutaneous tissues without any underlying bone lesion.

## Case Report

A 25-year-old male pharmacist presented to the clinic with an enlarging swelling of the right gluteal region which had lasted for two weeks. He had had a similar but painful swelling that had appeared three months before in the right subscapular region. The

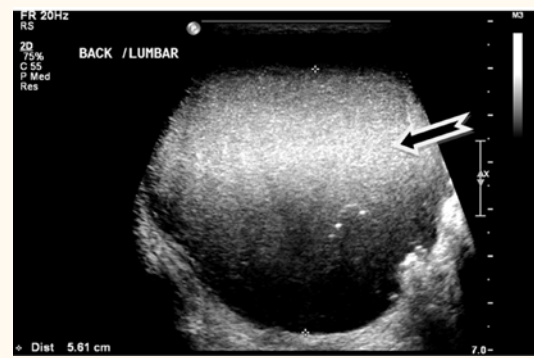


**Figure 1:** A photo of the right side of the patient's back showing the cold tuberculosis abscess extending from the thoracic to the gluteal region which is indicated by the arrow.

patient had sought the help of a traditional healer who managed the case with aggressive massage. The swelling had disappeared but two days later had reappeared in the right gluteal region. There was no fever or night sweating. He smoked, having consumed three cigarettes per day for the previous 5 years. Prior to this problem, the patient had a history of chronic non-bloody diarrhoea of one year's duration. It was associated with attacks of fever and he had lost about 15 Kg in weight. He was suspected of having ulcerative colitis and was put on mesalazine but had shown no improvement and, accordingly, had discontinued the medication. The patient had not received other medications such as corticosteroids. The patient gave a history of contact with a friend who had a history of chronic cough, weight loss, fever and night sweating for 8 months, and was suspected of having pulmonary TB.

On examination, the patient's temperature, blood pressure and pulse were normal. There was no lymphadenopathy. A systemic examination including the chest was normal. On examination of his back, there was a right-sided swelling extending from the infrascapular to the right gluteal region. The swelling was maximal at the gluteal region and measured 20 cm x 15 cm x 10 cm. It was cystic and non-tender. There were no skin changes and no spinal tenderness [Figure 1].

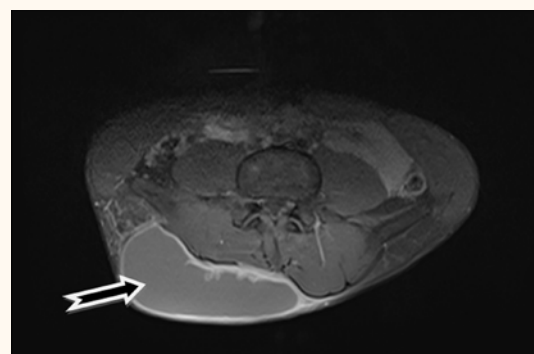
Investigations showed normal haemoglobin of 12.8 mg/L with normal complete blood



**Figure 2:** An ultrasound soft tissue study reveals complex fluid echoic lesion in the right paraspinal region, which is indicated by the arrow.

counts. C-reactive protein was 122 mg/L. Human immunodeficiency virus (HIV) and hepatitis screens were negative. A rapid plasma reagin (RPR) test was negative. A Mantoux test was 22 mm. A chest X-ray was normal. An ultrasound of the mass showed a fluid collection in the subcutaneous tissue of the right paraspinal region, extending from the ribs to the gluteal region and measuring 3.6 x 5.6 inches. It contained low level internal echoes. There were multiple areas of calcification noted in the posterior portion of the cyst. It was reported as a non-specific complicated cyst with the possibility of a chronic haematoma [Figure 2].

A magnetic resonance imaging (MRI) scan showed a large cyst extending from the level of the upper thoracic region to the gluteal region. It was predominately located posterior to the right *erector spinae* muscles. The proximal part of the cyst appeared to be intramuscular, whereas the lower lumbar and gluteal region appeared to be subcutaneous. There was a thick rim of



**Figure 3:** Magnetic resonance imaging of the right paraspinal region shows an encysted, thick-walled fluid collection posterior to the paraspinal muscles and located predominantly in the subdermis region, which is indicated by the arrow.

**Table 1:** Previous case reports of primary muscular tuberculous abscesses

Report	Muscle involved	Predisposing factors	Methods of investigation	Involvement of other organs	Outcome of treatment
Mascarenhas S, <i>et al.</i> <sup>7</sup>	Left masseter	No history of contact with TB-infected patient.	MRI of the face. <i>Mycobacterium tuberculosis</i> complex isolated from the drain of a facial abscess. Acid-fast bacilli not identified.	Erosion of the lateral surface of the left ascending ramus of the mandible	The patient responded to a 6-month course of anti-TB treatment
Ramakant D, <i>et al.</i> <sup>8</sup>	<i>Rectus abdominis</i>	No exposure to any known person with active TB.	Abdominal US. Histology of the excised granulation tissue surrounding the abscess and infiltrating the muscle was suggestive of tuberculous.	No bony or other organ involved	The patient responded to a 6-month course of anti-TB treatment
Trikha V, <i>et al.</i> <sup>2</sup>	<i>Biceps brachii</i>	No family history of TB.	MRI of the limb US of the muscle. Histopathology and culture of the tissue were positive for TB. The result of acid fast bacilli from the drained pus of the abscess was negative.	No bony involvement was shown	The patient responded to a 4-month course of anti-TB treatment, with full range of elbow movement.
Perez-Alonso AJ, <i>et al.</i> <sup>3</sup>	<i>Right rectus femoris</i>	No history of contact with TB-infected patient.	Plain X-ray. US of the thigh. MRI of the thigh. Culture was positive for <i>Mycobacterium tuberculosis</i>	There was no bony involvement.	The patient responded to anti-TB treatment.
Toda K, <i>et al.</i> <sup>9</sup>	<i>Gluteus maximus</i>	Patient had a history of TB 20 years previously.	CT scan of the muscle. MRI imaging. Open biopsy of the muscle showed chronic granulomatous tissue. Ziehl-Neelsen stain showed tuberculous bacilli.	The tumour invaded the ischium bone.	The patient responded to anti-TB treatment.
Harrigan RA, <i>et al.</i> <sup>6</sup>	<i>Psoas</i>	No history of contact with TB-infected patient.	CT of the abdomen and pelvis. Culture of the pus from the abscess was positive for <i>Mycobacterium tuberculosis</i> .	There was no bony or other organ involvement.	The patient responded to anti-TB treatment.

MRI = magnetic resonance imaging; US = ultrasound; TB = tuberculosis; CT = computed tomography.

enhancement at the periphery of the lesions with multiple thick enhancing septations noted at the periphery of the lesion. There were also a few small thin nodular enlargements. On the T2-weighted images, there were a few low T2 hypotensive areas, likely representing calcifications. There was no involvement of the spine, intraspinal canal or peritoneum. The lesion measured 34 cm in the craniocaudal direction. It measured 12 cm x 4.4 cm in the gluteal region. The MRI showed a large rim enhancing cystic lesion noted posterior to the right *erector spinae* muscles. It had enhancing septations and there were nodular changes. The lesion was reported as nonspecific and possibly representative of a chronic haematoma. However, a slow growing neoplastic cystic lesion could not be excluded [Figure 3].

The patient was admitted. An aspirate of the cyst was done, which revealed a creamy turbid fluid that indicated an abscess. Smears prepared from the fluid showed many neutrophils, some lymphocytes, and occasional macrophages. No malignant cells

were seen. The abscess was evacuated under ultrasound guidance and a sample of the evacuated material of the lesion, as well as a blood sample, was sent for culture of bacteria and fungi. A Ziehl-Neelsen stain was done to detect acid fast bacteria. The patient was started on empirical antibiotics (piperacillin/tazobactam and vancomycin) but he developed a reaction to one of the antibiotics, so they were stopped accordingly. The result of the microscopy showed two rods of one type of acid fast *bacilli* bacteria of TB. The culture was negative for other bacteria but was positive for acid fast *bacilli* bacteria of TB. Accordingly, the patient was started on antituberculosis chemotherapy with isoniazid (INH), rifampin (RIF), ethambutol (EMB) and pyrazinamide (PZA) for 9 months. The patient showed marked improvement and the swelling disappeared. The final diagnosis was a cold muscle and subcutaneous abscess caused by TB.

## Discussion

The clinical picture of this patient pointed to the diagnosis of TB as the cause of his huge, cold abscess. The presenting symptom of a mild tender abscess without systemic features, the history of chronic diarrhoea with fever, weight loss and sweating, and the history of contact with a suspected TB patient with the typical symptoms of TB as well as the highly positive Mantoux test and the confirmation of the diagnosis by isolation of the acid fast bacilli organisms from the needle aspirate were sufficient to prove the diagnosis. It seems that the origin of this abscess was the *erector spinae* muscles and, by application of massage, it drained through the adjacent subcutaneous tissues down to the buttock area.

TB usually involves the lungs and the hilar lymph nodes. Muscular involvement is very rare.<sup>4</sup> The percentage of musculoskeletal TB is around 3% of all cases of TB.<sup>2</sup> Soft tissue involvement is usually associated with an underlying disorder such as those that present in immunosuppressed patients, during immunosuppression therapy or collagen vascular disease, or upon local injury.<sup>3,5</sup> Our patient was immunocompetent and not suffering from any other disease. TB of the soft tissue can present in the form of an abscess as in this patient, or as a tuberculoma. Tuberculoma is a tumour-like mass resulting from the enlargement of a tuberculous lesion, while an abscess is a localised collection of pus. In most of the reported cases, muscle involvement coexists with adjacent bony or articular structures.<sup>2</sup> In our patient, the reports of both the ultrasound and MRI confirmed isolated muscle and subcutaneous involvement without bony lesions. Isolated tubercles muscle abscesses have been reported in the following muscles: the *biceps brachii*,<sup>2</sup> the right *rectus femoris*,<sup>3</sup> the *psaos*,<sup>6</sup> the *rectus abdominis*,<sup>7</sup> and the *gluteus maximus*<sup>8</sup> as well as the submasseteric space.<sup>9</sup> There has been no report in the literature of the involvement of the *erector spinae* muscles together with the adjacent subcutaneous tissues; nor has there been a report of an abscess of such a large size [Table 1]. We think that our patient was lucky that his TB was localised to the soft tissue and that it did not affect the spine. TB can affect any part of the spinal cord including the nerve roots; therefore, TB can present with upper or lower motor neuron involvement or a

mixed clinical picture.<sup>10</sup>

It has been reported that TB that affects the skeletal muscles spreads either directly from the bone or by the synovial lining of the joints or tendon sheaths.<sup>8</sup> It also has been reported that the primary focus of the disease is visceral (lungs, kidneys, lymph nodes), and musculoskeletal involvement occurs via haematogenous spread.<sup>11</sup> However, primary muscle involvement, as occurred in our patient, is rare. The mechanism of muscle involvement by TB in our patient may be explained by haematogenous spread from an undetected occult primary focus (i.e. his friend). The reason for the skeletal muscle TB has been attributed to various causes such as high lactic acid content of muscles, the absence of lymphatic tissue, a rich blood supply and the highly differentiated state of muscle tissue.<sup>12</sup>

Thankfully, our patient responded to the first line drugs (INH, RIF, EMB and PZA) recommended by the American Thoracic Society, Centers for Disease Control, and Infectious Diseases Society of America.<sup>13</sup> Anti-tuberculous medications cannot penetrate an abscess; therefore, it is mandatory to drain the abscess for the medication to be effective. It seems that the outcome of pure muscle involvement with TB is better than during spinal involvement. In his review of two groups of patients (one with spine or lamina involvement and the other with pure muscle involvement), Arora found that those with pure muscle involvement recovered completely in comparison to the ones in which the spine or the lamina were involved.<sup>14</sup>

## Conclusion

The diagnosis of extrapulmonary TB is often difficult. This case has been reported to increase the awareness of physicians regarding soft tissue TB. Although it is rare, physicians may come across similar cases in the future.

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