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Lumbar facet joint septic arthritis presenting atypically as acute abdomen – A case report and review of the literature

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ABSTRACT

INTRODUCTION: Septic arthritis of the lumbar facet joints is uncommon. The clinical presentation is unusual and patients usually presents with acute back pain or with signs and symptoms mimicking acute abdomen.

PRESENTATION OF CASE: A 52 year old man was admitted to the surgical ward with acute onset of abdominal pain and a provisional diagnosis of acute pyelonephritis. After the initial inconclusive investigations, magnetic resonance imaging was highly suggestive of lumbar facet joint septic arthritis. He was treated with intravenous antibiotics with complete resolution of infection.

DISCUSSION: The diagnosis of septic arthritis of facet joint is becoming more common with MRI scans. The clinical signs and symptoms are usually difficult to differentiate from acute spondylodiscitis. The commonest organism isolated is *Staphylococcus aureus*. A prompt and early diagnosis and treatment help to eradicate infection and prevent complications.

CONCLUSION: The atypical presentation of facet joint septic arthritis is one of the reasons why early diagnosis is elusive. Definitive diagnoses with MRI and bacterial culture as well as prolonged antibiotic therapy are recommended in this condition.

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1. Introduction

Septic arthritis of the lumbar facet joints is unique and infrequent. It usually affects older patients and immune-compromised but there are case reports of young and immune-competent patients [1]. Even though various risk factors are proposed including diabetes mellitus and extra spinal infections, haematogenous spread is the commonest cause of this infection [2]. Facet joint injections and acupuncture have been reported as one of the causes of septic arthritis of the facet joints [3,4]. The diagnosis of this rare clinical condition is difficult and late as it can mimic degenerative disc disease and spondylosis. The radiological features appear very late in the disease by which time it can give rise to paraspinal [5] or epidural abscess [6]. The commonest organism causing septic arthritis of the facet joint is *Staphylococcus aureus* [1]. The investigation of choice is MRI scan of the lumbar spines [7]. The MRI features are not entirely specific for septic arthritis of facet joints, whilst joint effusion, peri-articular bone marrow oedema, enhance-

ment and per-articular soft tissue oedema are suggestive features but could be seen in inflammatory arthropathy.

We report a very unusual case of septic arthritis of the lumbar facet joint presenting as an acute abdomen. The patient was initially investigated for biliary and renal colic which turned out to be negative. An MRI scan of the lumbar spines showed fluid collection in the facet joints suggestive of septic arthritis. The blood culture showed growth of *Staphylococcus aureus* sensitive to Flucloxacillin. He was treated non operatively with complete resolution of symptoms.

2. Presentation of case

A 52 year old man was admitted to the general surgical ward from A&E with complaints of sudden onset of abdominal pain. The pain was mainly localised to the right flank with radiation down to the groin. It was severe gripping type of pain which comes in waves and pulsating in nature. He complained of trace haematuria. There was no history of any previous gall stones or renal disease. On examination he had a temperature of 38.4°. He had a pulse rate of 112 per minute and blood pressure was 140/90. Examination of the abdomen revealed severe tenderness in the right flank and upper quadrant with no guarding. A clinical diagnosis of biliary/renal colic was made. The blood tests showed White Cell Count (WCC) 8.6 and

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Fig. 1. T2T weighted MRI image showing fluid collection in the right facet joint.

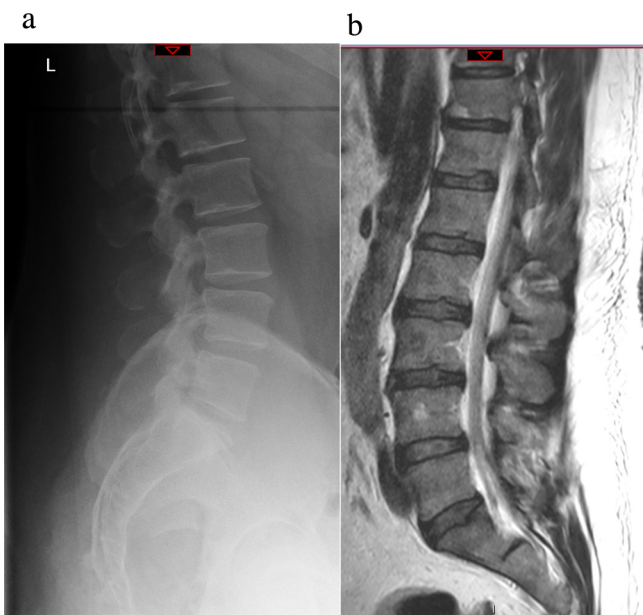


Fig. 2. a and b: Plain radiography and T2 weighted sagittal MRI views showing no evidence of discitis.

C – reactive protein (CRP) 203 and urine dip stick few RBCs. His liver function tests, renal profile and serum amylase was normal. Initial investigations including CT KUB scans of the abdomen did not reveal any intra-abdominal pathology. He was started on empirical Co-amoxiclav intravenously. In the following days his pain got worse and the blood tests showed CRP of 261. He was referred to orthopaedics with a suspected diagnosis of discitis.

The orthopaedic review showed tenderness in the right paraspinal muscles with no spinous process tenderness. There was no neurological deficit. An MRI scan of the lumbosacral spines was done which revealed right L4/L5 right facet joint septic arthritis (Fig. 1). The plain radiography and T2 weighted MRI views showed no evidence of discitis (Fig. 2a and b). The blood culture report came as *Staphylococcus aureus* sensitive to Flucloxacillin and the appropriate antibiotics were commenced. The patients symptoms started to improve with less pain and the temperature came down to 37.1°. He was continued on intravenous Flucloxacillin for 14 days and then oral further 4 weeks. During this time the symptoms continued to improve with less pain. The serial blood test showed that the inflammatory markers improving and going down to normal (Fig. 3). A repeat MRI scan of the lumbosacral spine was normal

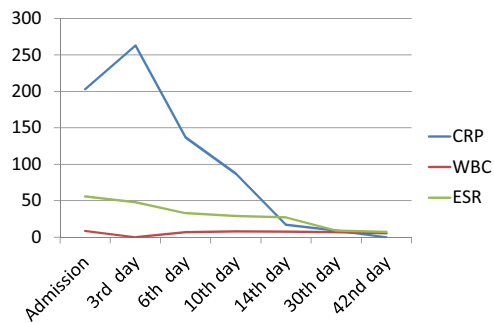


Fig. 3. Graph showing sequential inflammatory blood markers of the patient.

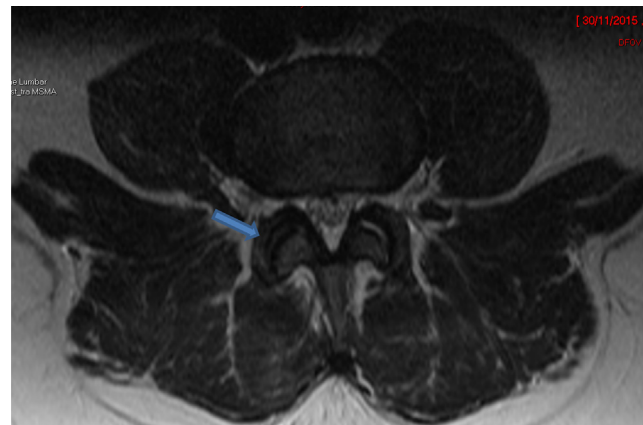


Fig. 4. Follow up MRI scan after six weeks showing complete resolution of septic arthritis in the facet joint.

(Fig. 4). He was reviewed at 3 months; he had regained good spinal movements with no pain and was discharged.

3. Discussion

The septic arthritis of the lumbar facet joints was first reported by Halpin in 1981 [8]. It can occur as a result of direct inoculation such as acupuncture, facet joint injection, epidural catheters and spinal surgery [9] or by haematogenous spread [2]. The precise pathogenesis of the septic arthritis of the lumbar facet joints is not very clear. The effusion or haemarthrosis following injury or back sprain allows bacterial colonisation thus giving rise to septic arthritis [8]. Ergan et al. thought that ant degenerative lesions affecting the facet joint may cause an increased risk for bacterial infection [10].

The clinical picture of septic arthritis of facet joints varies. Most of the time it is a difficult condition to diagnose and a very high index of suspicion are needed. The clinical signs and symptoms resemble to that of septic discitis usually [2]. The patients may be febrile. The symptoms include pain at rest and activity. Dauwe et al. noticed that in case of septic arthritis of the lumbar facet joints patients will have pain on hyper extension rather than flexion of the spine [11]. The pain also will be more lateral in location for facet joint arthritis and midline for discitis. In septic arthritis of the facet joints the pain radiates to the flank, buttock or thighs and can mimic pyelonephritis as it did in our patient [12]. The patients sometimes can present with neurological deficits as well. This is due to the extension of the infection from the facet joints into the epidural or intradural space [13,14].

The inflammatory markers including CRP and ESR are consistently raised whereas the WBC are raised only in 50% of cases [15]. In pyogenic process like this, it is usually the neutrophils that are raised even though it does reflect the raised total white blood cell count (WBC). The commonest organism causing septic arthritis of

the facet joints are *Staphylococcus aureus* which was isolated in our patient. But other bacterial organisms like streptococcus, gram negative rods and *Staphylococcus epidermis* are also reported [10,16]. Herrero et al. reported a case of *E. coli* as a causative organism for septic arthritis of lumbar facet joint following a urinary tract infection [17]. Blood cultures are usually positive in 50% of cases [11]. Aspiration of the joint under fluoroscopic or ultrasound guidance can be done if the blood cultures are negative [10].

MRI scan is the imaging modality of choice. It is both sensitive and specific within two days of infection [18]. The scan gives accurate information regarding the extent of joint involvement and extra articular spread. It gives an overall assessment of the bone and affiliated soft tissue changes. Simple effusions can usually be differentiated from haemorrhage but complex exudates and pus can have variable appearances. Tumour would ordinarily have an appearance distinguishable from septic arthritis. It can also be used to monitor the response of treatment. MRI is arguably of limited benefit in follow once a diagnosis has been established, radiological changes may lag behind the clinical improvement, although it would ensure resolution of effusion or peri-articular collection and one would expect to see resolution of features over time. The Technetium 99 scan is 100% sensitive to detect infection in facet joints as early as three days but not specific [2,10]. A single photon emission computed tomography (SPECT) scan will help to confirm bone scan findings and localise the involvement of facet joints [19].

The treatment of choice is conservative with intravenous antibiotics [2,8]. Our patient had intravenous antibiotics for two weeks followed by oral antibiotics for four weeks. The response to treatment can be monitored by serial inflammatory markers and a follow up MRI scan, which was also done in our patient. Aspiration of the facet joint under fluoroscopic guidance was required only when blood cultures were negative or when the diagnosis of the septic nature of the arthritis was in doubt [10]. Open arthrotomy or surgical drainage and debridement are typically reserved for the patient with infection refractory to antibiotic trial or with acute neurological compromise [20].

Even though some authors have reported persistent back pain, the outcome of conservative treatment of septic arthritis of the facet joints is usually favourable [8,10].

4. Conclusion

Septic arthritis of the lumbar facet joints is rare disease with atypical presentation. Early diagnosis and treatment with antibiotics is essential for complete resolution of the infection and also to prevent complications such as epidural abscess and neurological deficits.

Competing interest

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Ethical approval

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Consent

Informed consent has been obtained.

Author contribution

Aysha Rajeev – has contributed to study concept, design data collection, data analysis and writing of the paper.

Nameer Choudhry – preparation of case report.

Mazharuddin Shaikh – preparation of case report.

Mike Newby – contributed towards the management and follow up of the patient.

Guarantor

The author takes full responsibility for the work.

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