CASE REPORT

Thoracic vertebral osteomyelitis: an unusual complication of Crohn's disease

Olushola Ajayi,¹ Nithiananthan Mayooraan,² Nasir Iqbal³

¹Department of General Surgery, Letterkenny General Hospital, Letterkenny, Donegal, Ireland

²Department of Surgery/Colorectal, University College Hospital Galway, Galway, Co. Galway, Ireland

³Department of General/Colorectal, Letterkenny General Hospital, Letterkenny, Ireland

Correspondence to

Dr Nithiananthan Mayooraan, mayoor18@yahoo.co.uk

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SUMMARY

Vertebral osteomyelitis complicating Crohn's disease is a rare occurrence and mostly occurred in patients with Crohn's disease complicated by an abscess or fistulising disease. We report a case of thoracic vertebral osteomyelitis, occurring in a refractory Crohn's disease without contiguous abscess or fistula with the bowel.

BACKGROUND

Vertebral osteomyelitis as a complication of Crohn's disease is a rare occurrence and has been reported in 0.7% of patients in the largest radiological series. Well-known extraintestinal, skeletal manifestation of inflammatory bowel disease especially affecting the spine include muscle strain, sacroiliitis or spondylitis, which are commonly suspected as causes of back pain. We report a case of a 38-year-old woman presented to the hospital with severe back pain and fever. MRI of the spine shows thoracic vertebral osteomyelitis without associated bowel fistulisation or deep-seated abscess and was managed conservatively with antibiotics and analgesia.

CASE PRESENTATION

A 38-year-old woman presented to the emergency department with a 3-day history of progressively severe sharp lower thoracic back pain. The pain radiates across the back and also to the left thigh and is relieved with the use of tramadol or diclofenac analgesics. There is associated back stiffness, fever with rigour and vomited three times since the onset of symptoms. There was also associated upper abdominal pain, with increased output from the ileostomy but there was no blood in stool. There was no previous back pain or corresponding trauma to the back and no neurological deficit in the lower limbs or urinary symptoms.

Examination shows an ill-looking young lady in painful distress with a temperature of 38.2°C, heart rate 102/min and blood pressure 109/63 mm Hg. The abdomen was soft, non-distended with tenderness in the upper abdomen but no rebound or guarding. Spine examination shows tenderness at the lower thoracic and upper lumbar spine, with no paraspinal tenderness or swelling but with some limitation in spine movement.

She had a history of Crohn's disease for the past 20 years and had a defunctioning ileostomy a year ago due to severe refractory disease, with a previous caesarean section. She has been on injection of

Humira every fortnight for the past 2 years and cymbalta.

The patient was treated with intravenous flucloxacillin 1 g four times a day for 4 weeks, with oral antibiotics for next 2 weeks and analgesia. Fever and back pain started to relieve after few days of intravenous antibiotic therapy. There was also improvement in the inflammatory markers and the patient was discharged home on oral antibiotics following completion of 4 weeks intravenous antibiotics and reviewed in the outpatient department for a post-treatment MRI of the spine that has been planned.

INVESTIGATIONS

Routine blood tests showed white cell count 5.6, haemoglobin 11.6 g/dL, C reactive protein 196 and erythrocyte sedimentation rate of 64. Blood cultures done grew *Staphylococcus aureus* in the aerobic and anaerobic bottles, which is sensitive to flucloxacillin and gentamicin. CT of the abdomen and pelvis shows a pancolitis with mural oedema and pericolic fat stranding on the right colon (figure 1). An echocardiogram conducted to check for mural thrombus was negative. MRI of the thoracolumbar spine shows mild increased signal intensity in the T2 signal in the T10 vertebral body (figure 2). Differentials would include oedema related to early vertebral osteomyelitis.

TREATMENT

The patient was treated with intravenous flucloxacillin 1 g four times a day for 4 weeks, with oral antibiotics for next 2 weeks and analgesia. Fever

Figure 1 Axial view of contrast-enhanced CT of the abdomen and pelvis.

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Figure 2 MRI of the thoracolumbar spine showing mild increase signal intensity in the T10 vertebral body.

and back pain started to relieve after few days of intravenous antibiotic therapy. There was also improvement in the inflammatory markers and the patient was discharged home on oral antibiotics following completion of 4 weeks intravenous antibiotics and reviewed in the out-patient department.

OUTCOME AND FOLLOW-UP

The patient was followed up in the outpatient clinic, and recovered well.

DISCUSSION

Vertebral osteomyelitis is a rare and potentially serious complication of Crohn's disease with few reported cases in the literature. The precise frequency is unknown, but the first case of Crohn's disease was described by Goldstein *et al* in 1969, London and Fitton in 1970.^{1 2} Back pain in patients with Crohn's disease may come from various causes but unremitting back pain with systemic features in the context of Crohn's disease should raise suspicion of retroperitoneal extension of disease. Osteomyelitis complicating Crohn's disease usually affect the bony structures of the pelvis and lower spine, and most specifically the bony right ilium, which is related to the nearby terminal ileum and caecum, which is the common site of clinically defined Crohn's disease.³ The presumed mechanism of spread of infection is by direct extension of pelvic inflammatory mass, abscess or fistulous tract or possibly as a result of septic thrombophlebitis extending via the retroperitoneal vertebral venous plexus to the vertebral bones.

The constant feature is persistent pain at the affected spine with associated bony tenderness and stiffness. This may be difficult to differentiate in patients with pre-existing spondylitis/sacroiliitis, other associated features include fever with rigours, limb weakness or paralysis, paraesthesia, numbness due to the cord, caudal equinal or nerve roots involvement. In our case, fever with localised bone pain and tenderness with stiffness raises the suspicion of an inflammatory process of the spine.

MRI with gadolinium is extremely useful in the early diagnosis of vertebral osteomyelitis and is presently the imaging procedure of choice due to its superior advantage of showing bone marrow abnormalities before bone destruction occurs.^{4 5} Though vertebral osteomyelitis is normally defined by the

location and extent of spinal disease and associated soft tissue involvement, it must also be suspected when there is an abscess cavity or an enteric fistula adjacent to the spine. A review by McHenry *et al*⁶ shows motor weakness or paralysis; longer time to diagnosis, hospital acquisition remained as independent risk factors for adverse outcome. Other imaging modalities include isotope bone scan, CT scan and plain film X-ray. However, it is pertinent to note that changes on plain films are usually delayed for weeks following established bony destruction. Precise definition of the invading organism often help guide antibiotics therapy against it. A bone biopsy may best document the specific microbial agent, but a bone aspirate or pus obtained during surgical intervention, though yield is lower, but may well suffice. In our patient, the blood culture sensitivity was used to guide antibiotics therapy with good outcome for the patient.

Treatment of spinal osteomyelitis includes bed rest, immobilisation and administration of intravenous antibiotics. Operative intervention is indicated in cases of disease refractory to medical treatment, or neurological deficit due to spinal involvement. Other surgical intervention indicated includes drainage of abscess in cases of pelvic/presacral abscess, enteric fistulas may be managed with defunctioning stomas with antibiotics and nutritional support. Owing to early presentation of our patient with absent neurological sign, a conservative approach was used with good outcome. A review by McHenry *et al* shows motor weakness or paralysis, longer time to diagnosis, hospital acquisition of infection remained as independent risk factors for adverse outcome.

In conclusion, this report highlights the importance of high index of suspicion, early investigations and aggressive management strategy in patients with inflammatory bowel disease with back pain.

Learning points

- ▶ Back pain with systemic features in a patient with Crohn's disease should raise the suspicion of vertebral involvement.
- ▶ Early imaging with MRI helps to reach the diagnosis promptly.
- ▶ Blood cultures and appropriate antibiotic selection are essential to treat this condition.

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Competing interests None.

Patient consent Obtained.

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