

***Eggerthella lenta* as a cause of anaerobic spondylodiscitis**

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ABSTRACT

Anaerobic organisms are a rare cause of spondylodiscitis. *Eggerthella lenta* is an organism that is not commonly associated with spondylodiscitis. We describe a case of spondylodiscitis due to *Eggerthella lenta* in an 82-year-old Chinese woman presenting with back pain. The organism was isolated from tissue cultures obtained via radiology-guided biopsy.

Keywords: anaerobic bacteria, anaerobic spondylodiscitis, back pain, discitis, *Eggerthella lenta*, spondylodiscitis

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INTRODUCTION

Spondylodiscitis is an infection of the intervertebral disc and the adjoining vertebral bones. It is an uncommon disease with an incidence of two per 100,000 each year and accounts for only 2% of all osteomyelitis cases.⁽¹⁾ Back pain and fever are the main presenting symptoms, but many patients also present with nonspecific complaints, such as generalised weakness, loss of weight or poor appetite. Other than infections secondary to *Mycobacterium tuberculosis*, common causative organisms include aerobic bacteria, such as *Staphylococcus (S.) aureus*, *Streptococcus* spp., *Escherichia (E.) coli*, *S. epidermidis*, *Brucella melitensis* and *Proteus* spp.⁽²⁾ Anaerobic organisms are a less common cause of spondylodiscitis. We present a case of spondylodiscitis due to *Eggerthella lenta*, an anaerobic organism.

CASE REPORT

An 82-year-old Chinese woman presented to the emergency department with complaints of low back pain of two weeks' duration, after a fall at her home. She had been having increasing difficulty walking and had been bed-bound because of the back pain. She also gave a history of constitutional symptoms, such as loss of weight and loss of appetite, for a week. Prior to the fall, the patient had been able to ambulate independently. The patient had a history of vertebral compression fractures secondary to osteoporosis five years ago. On



Fig. 1 Lateral radiograph of the lumbar spine shows osteopenia and vertebral compression fractures involving multiple levels.

examination, the patient was alert and afebrile. There was localised tenderness over the lumbar spine but no focal spinal deformity. The spinal range of motion was limited, secondary to pain. Cardiovascular, abdominal and respiratory examinations were unremarkable. There was no demonstrable neurological deficit, although the lower extremity strength assessment was suboptimal due to the back pain. Straight leg raising was at least 50° on both sides.

Initial blood investigations showed mild leucocytosis with a white blood cell count of 10.79×10^9 cells/L and predominant neutrophilia. Inflammatory markers, such as erythrocyte sedimentation rate (ESR) and C-reactive protein (CRP), were also elevated (ESR 30 mm/hr, CRP 37.7 mg/L). Other blood investigations such as liver enzymes were not abnormal. Myeloma screen was negative. Urine analysis showed significant pyuria

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Fig. 2 Sagittal T1-W MR image of the spine shows reduced signal intensities of the L1–L2 vertebrae and discs.



Fig. 3 Sagittal T2-W MR image of the spine shows abnormal signal intensities at the L1/L2 and L2/L3 disc spaces.

with a white blood cell count of 747 cells/uL. The urine culture was reported as doubtful significant growth of *E. coli* and *Klebsiella* spp. No organisms were isolated from the initial and subsequent sets of blood culture investigations. The patient was initially treated with ciprofloxacin for the urinary tract infection.

Radiograph of the lumbar spine revealed osteopenic bones with multiple levels of compression fractures involving the L1–L4 vertebrae, in keeping with the past history of osteoporotic fractures (Fig. 1). There was narrowing of the L2/L3 disc space and Grade 1 retrolisthesis of the L1 on L2 and L3 on L4 vertebrae, and mild anterolisthesis of the L5 on S1 vertebrae. Sagittal T1-weighted magnetic resonance (MR) imaging of the spine revealed reduced signal intensities of the L1–L2 vertebrae and intervertebral discs (Fig. 2). T2-weighted sequences demonstrated significant abnormal signal intensities of the L2 vertebra and of the L1/L2 and L2/L3 disc spaces (Fig. 3). There was also enhancement of the paravertebral soft tissues with intravenous contrast, although no frank abscess collection was demonstrated (Fig. 4). No significant bone retropulsion into the spinal canal was noted. Computed tomography (CT) of the thorax, abdomen and pelvis did not show any abscess collection to suggest possible sources of infection.

In view of the negative blood cultures and MR imaging findings of the lumbar spine, a CT-guided biopsy was arranged. Bone biopsy and aspiration of the L1/L2 disc space and adjacent endplate of L2 yielded blood-stained serous fluid and fragmented bone specimens. Both aerobic and acid-fast bacilli cultures were negative. Tuberculosis polymerase chain reaction of the biopsy tissue was also negative. However,

Eggerthella lenta was isolated from the anaerobic culture of the biopsy specimen. The patient was initially treated with intravenous ceftriaxone and cloxacillin, but this was changed to trimethoprim/sulfamethoxazole and metronidazole once the biopsy tissue culture results were known. The patient's stay in hospital was further complicated by nosocomial sepsis and congestive cardiac failure. Antibiotics were discontinued after five weeks of treatment, with normalisation of white blood cell counts and the CRP level.

Repeat MR imaging of the lumbar spine showed stable findings with no abscess collection or compromise of the spinal cord. A lumbar corset was prescribed to provide some back support and comfort. The initial physical therapy progress was limited by back pain. After four weeks of rehabilitation, the patient was able to attempt standing and ambulation with a walking frame. At discharge, she was able to ambulate over short distances and perform some activities of daily living with assistance from her caregiver.

DISCUSSION

Eggerthella lenta is an anaerobic non-sporulating Gram-positive bacillus that is part of the normal human intestinal tract flora. The organism was formerly known as *Eubacterium lentum* before it was reclassified in 1999 into a new genus based on gene analysis studies.⁽³⁾ The organism has been implicated in infections of the genital and gastrointestinal tracts.⁽⁴⁾ Spondylodiscitis due to anaerobic organisms is an uncommon disease, accounting for less than 3% of all cases of spinal infections.⁽⁵⁾ The most frequent causative organisms include *Bacteroides* spp., *Propionibacterium acnes* and *Peptococcus* spp.,⁽⁵⁾

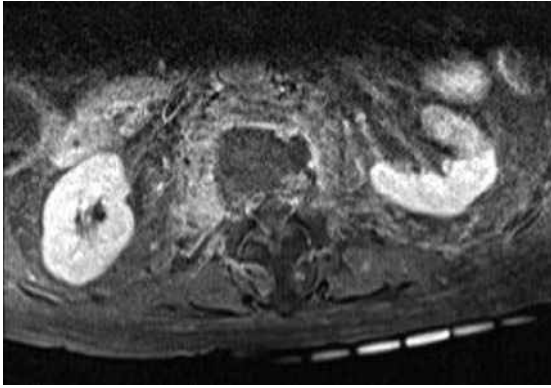


Fig. 4 Post-contrast axial T1-W MR image shows paravertebral soft tissue enhancement. No frank abscess collection is noted.

although other anaerobes, such as *Eikenella corrodens*,⁽⁶⁾ *Prevotella intermedia*⁽⁷⁾ and *Fusobacterium* spp.,⁽⁸⁾ have been described in the literature.

Patients with anaerobic spondylodiscitis present with similar symptoms as infections attributed to aerobic organisms. As with the case reported here, most patients present with low back pain of an unremitting nature. Fever is another common presenting symptom, although more than half of all patients may be afebrile.⁽⁵⁾ Neurological deficits secondary to spinal cord compression may be seen in up to 50% of cases at presentation.^(1,9) Concomitant constitutional symptoms, such as weight loss, generalised weakness and anorexia, have also been often reported. Physical examination findings include localised tenderness over the back, paraspinal muscle spasm and limitation of spinal movement. Neurological findings indicating radiculopathy or myelopathy may be evident.

Delays in presentation and diagnosis are common in many cases given the nonspecific nature of the presenting symptoms, the ubiquity of back pain, and the wide range of pathological processes that can present with back pain. While a definitive diagnosis was reached about three weeks after the initial onset of symptoms in our case, delays of up to six months have been reported in the literature.^(1,9) This may be especially true, as in our case, as the back pain may be attributed to an osteoporotic vertebral fracture, further delaying other definitive investigations. Prudent use of laboratory and radiological investigations assists in the timely diagnosis of the disease. Elevations in inflammatory markers such as ESR, CRP and white blood cell counts, while not specific for spondylodiscitis, do serve a useful role in screening for an underlying inflammatory process. Blood cultures are useful in isolating the causative organism although only around half may be positive.⁽¹⁰⁾ Cultures from urine, sputum or any other portals of entry, such as central lines and surgical sites, may be

helpful in elucidating the source of the infection.

CT-guided percutaneous disc biopsy is a useful tool in the microbiological diagnosis of spondylodiscitis. Tissue cultures from disc biopsies have a diagnostic yield of at least 36%, although this can vary depending on the diagnostic criteria used and any antibiotic treatments received prior to the biopsy.⁽¹¹⁾ A recent work on nucleic acid amplification has suggested potentially better methods of obtaining a microbiological diagnosis, especially in culture negative cases.⁽¹²⁾ Radiographs typically do not show any changes in the first few weeks, but are useful for excluding other pathologies, such as vertebral fractures, that may cause back pain. Findings on radiographs of the spine include diminution of endplate definition, narrowing of intervertebral disc space, loss of vertebral body height and an abnormal psoas shadow.⁽⁹⁾ MR imaging has proven to be a very useful tool in the early diagnosis of spondylodiscitis. T1-weighted MR images typically demonstrate a reduction in signal intensities, while T2-weighted sequences may show abnormal signal intensities at the affected intervertebral discs and adjacent vertebrae.

Selection of antibiotic treatment depends very much on the causative organism and the presence of any underlying primary source of infection. The *Eggerthella* spp. are generally sensitive to penicillins and metronidazole, while vancomycin sensitivity can be variable.⁽⁹⁾ This case illustrates the need to consider infectious spondylodiscitis as a differential diagnosis in an elderly patient presenting with back pain. A wide range of organisms can cause spondylodiscitis. Clinicians need to take into consideration uncommon pathogenic organisms in the management of bacterial spondylodiscitis.

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