

# Spondylodiscitis A Red Flag For Endocarditis?: A Case Report

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## Citation

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## Abstract

Endocarditis has been shown to be a common cause of vertebral osteomyelitis. This combination is potentially fatal and needs to be diagnosed early with an echocardiogram. Suspicion is the key with a complete history taking and physical examination. In this article we review the literature for the diagnosis and management of spondylodiscitis in relation with endocarditis. We illustrate this review with a case report of delayed diagnosis of endocarditis in two patients with spondylodiscitis.

## INTRODUCTION

Spondylodiscitis is a condition that most orthopaedic surgeon will have to deal with. Its diagnosis can be challenging. It is known that the pathogenesis of the disease is mainly haematogenous in origin and various predisposing factors such as cancer, diabetes mellitus, steroids, chronic renal or hepatic disease and poor dental hygiene have all been highlighted<sup>1</sup>. Recently it has been recognised that infectious endocarditis is the cause of spondylodiscitis more frequently than it was believed. A thorough history taking and physical examination are therefore crucial for the diagnosis. It is important to note the presence of a cardiac past medical history (such as valve replacement surgery), to actively look for the presence of a murmur on auscultation of the heart and to proceed with blood cultures in any patient with a suspicion of spondylodiscitis. If a disc infection is confirmed by a biopsy an echocardiogram should be systematically performed if there is some cardiac history or if the biopsy grows streptococcus species in order to exclude endocarditis. In this article we review the literature for the diagnosis and management of spondylodiscitis in relation with endocarditis. We illustrate this review with a case report of delayed diagnosis of endocarditis in two patients with spondylodiscitis.

It was also noted that he had a pan-systolic murmur from congenital mitral valve disease.

A plain X-ray was noted to show degenerative changes with disc space narrowing and end plate involvement with sclerosis at L1-2 level (Figure 1).

## CASE REPORT 1

Mr RW a 59 years old gentleman was admitted with a 5 week history of lower back pain associated with night sweats, a cough and weight loss of 4 kilograms. On examination he was neurologically intact but was significantly tender over L1-2.

### Figure 1

Figure 1: Lateral X-Ray of lumbo-sacrum.



The investigations ordered were a blood cultures, a full blood count (FBC), liver function tests (LFT), prostate specific antigen (PSA), erythrocyte sedimenting rate (ESR) and C-reactive protein (CRP); urine was sent off for microscopy and culture and 3 mid-stream urine samples for acid fast bacilli. He was noted to be afebrile on admission. The results of the tests were as follows; ESR 86 mm/hr (1-10), CRP 134 mg/dL (1-5), PSA 1.7 ng/mL (0-4), ALK Phos 241 U/L (38-126).

The next investigation decided upon was an MRI scan with a biopsy of L2. Following the MRI the patient's condition deteriorated. His temperature rose to 39.5 degrees Celsius and he became acutely short of breath. He was reviewed by the on call medical team and was transferred to the coronary care unit. He had developed acute cardiac failure. This gentleman's pansystolic murmur was noted on examination and in view of the clinical picture a provisional diagnosis was made and the patient investigated with an

echocardiogram.

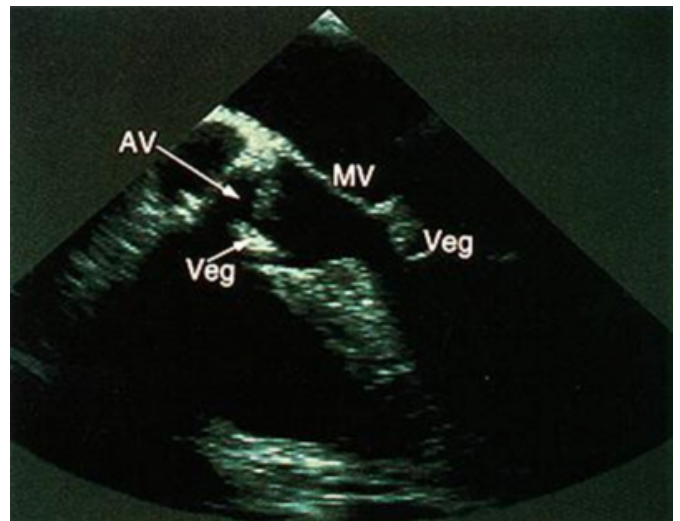
The microbiologist became involved at this point as they had grown a coagulase negative staphylococcus from the original blood cultures, but had suspected this to be a contaminant. However, in view of the clinical picture antibiotics were started. Further blood cultures confirmed the organism to be *Staphylococcus epidermidis*.

The MRI scan showed bright signal between L1-2 with adjacent granulomatous responses consistent with infective osteomyelitis.

The echocardiogram confirmed the suspicion of bacterial endocarditis; both the aortic and mitral valves were colonised (Figure 2).

### Figure 2

Figure 2: Transesophageal echo-cardiogram showing vegetations (veg) on aortic valve (AV) and mitral valve (MV).



Further direct questioning revealed that the patient had, about 2 weeks before the original episode of atypical chest pain and shortness of breath undergone dental treatment without taking antibiotic prophylaxis. Hence this gentleman had more than likely developed subacute bacterial endocarditis at this point which subsequently presented as acute spondylodiscitis.

His condition deteriorated further and he was transferred to St Thomas Hospital for emergency treatment. He underwent an emergency valve replacement.

### CASE REPORT 2

We admitted a 79 years old lady with a 2 months history of back pain. Her symptoms had started two months before her

admission with an acute episode of lower back pain that left her stuck in bed. She was seen by her GP and had an MRI scan showing evidence of vertebral osteomyelitis at L2 level. She was then referred to our spinal unit in order to obtain a CT guided biopsy.

She had been afebrile all the way through. She had had no recent cough, UTI, but described a recent venous ulcer on her left lower leg which had now healed. There was no history of heart condition or surgery such as valve replacement and no loss of weight. The patient was otherwise fit and well.

The neurological examination of her legs was normal.

Examination of her chest demonstrated a very mild systolic murmur.

Three days after her admission to our unit, Mrs B had a CT guided biopsy which confirmed the diagnosis of vertebral osteomyelitis, growing streptococcus Viridans sensitive to penicillin. Her ESR was 98, CRP 100 and WBC 3.6. She was started on 1.2 Gr of Benzyl penicillin 6 times a day. Because of the murmur heard during examination of her heart and the disc culture results, the patient had an echocardiogram, revealing vegetations on the aortic valve.

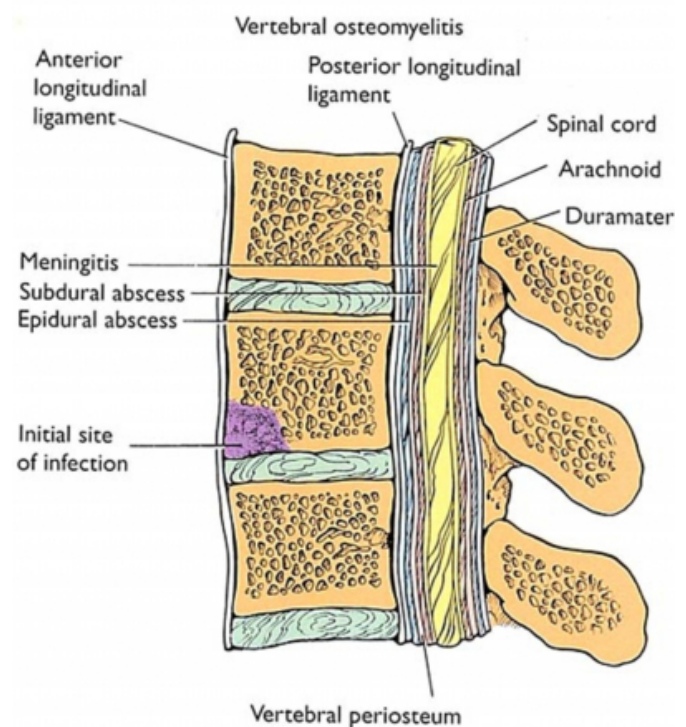
She was referred to the cardiologists for further management.

### DISCUSSION

Bacterial spondylodiscitis is an infection of the intervertebral disc and the adjacent vertebral body. It usually starts at the endplate of the vertebra and involves the disc itself subsequently (Figure 3).

**Figure 3**

Figure 3: The initial infection involves the anterior-inferior portion of a vertebral body, suggesting spread from the bony entrance of the anterior spinal artery. However, retrograde infection through Batson's plexus of veins is also postulated. Posterior extension of the infection may lead to epidural and subdural abscesses or even meningitis. Extension anteriorly or laterally may lead to paravertebral, retropharyngeal, mediastinal, subphrenic, psoas, or retroperitoneal abscesses.



Infection classically follows the haematogenous route from a distant site such as urinary tract infection, endocarditis, cutaneous infection or IV drug use. The classical presentation of patients is with a history of back pain associated with asthenia and pyrexia although none of these symptoms are specific. The management of any patient with a history of uncontrollable back pain should include a detailed history taking, inquiring about the nature of the pain, its exact location, presence of radiation from the painful site, exacerbating and relieving factors. It is crucial to enquire about the past medical history of patients noting that co morbidities such as cancer, diabetes, steroids medications, and chronic renal or hepatic diseases can predispose to spondylodiscitis<sup>2</sup>. Other factors such as smoking, alcohol, asthma and poor dental hygiene have all been shown to be predisposing factors for infection<sup>3</sup>. Furthermore patients with a cardiac history such as valve replacement or a known murmur, admitted with back pain should always alert the clinician of the possibility of endocarditis as the source of their infection and

systematically have an echocardiogram done, especially if the most likely cause of the discitis is a streptococcus species.

It is important to note that amongst patients with a diagnosis of discitis, those with neurological manifestation such as paraparesia, paraplegia and meningitis are more likely to have a tuberculosis or staphylococcus infection. Examination should include a full neurological examination, a head to toe inspection looking for a possible site of entry (ulcers, pressure sore, furuncles, abscess, recent wound), and a chest examination to exclude chest infection or a heart murmur.

Diagnostic tests include imaging and laboratory test. The former must include an antero-posterior and lateral X-ray of the spine in the area that is reported as painful and an MRI scan which is still the most sensitive method to date even in very early stage of the disorder <sup>4</sup>. An echocardiogram should be ordered in patients with spondylodiscitis associated with a cardiac past medical history or a heart murmur. Lab tests such as urinary dipstick, MSU, sputum culture, CRP, FBC and ESR are also useful. Blood cultures should be done on admission and ideally a CT guided biopsy of the infected disc should be organized with the radiology department so that the diagnosis can be confirmed, the sensibility for antibiotics determined precisely and the treatment started.

In a retrospective review of 6 years duration Pigrau et al <sup>5</sup> report that among 606 patients with infective endocarditis, 28 (4.6%) had pyogenic vertebral osteomyelitis and among 91 cases of pyogenic vertebral osteomyelitis, 28 (30.8%) had infectious endocarditis. Mulleman et al <sup>6</sup> found a similar concomitant incidence of infective endocarditis (26%) during Streptococcal and enterococcal spondylodiscitis. In a series of 92 cases of infective endocarditis, Le Moal et al <sup>7</sup> reported an incidence of 15 % of concomitant

spondylodiscitis (14 cases), with the later infection diagnosed before the endocarditis.

### **CONCLUSION**

Our cases and the literature highlight the fact that endocarditis is a frequent cause of spondylodiscitis (up to 30% in certain series). The complications from this pathology if left undiagnosed can be fatal and it is crucial to keep in mind that a thorough past medical history taking and a chest examination are a crucial part of the working diagnosis in these patients. If in doubt, the cheap, easy and non invasive echocardiogram will reassure the clinician and exclude endocarditis as a cause of infection.

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