Ch 17 (99-102).

*Journal of Orthopaedic Surgery 1996, 4(2): 99–102*

# Group B streptococcal spinal osteomyelitis involving two contiguous vertebrae: A case report

**VS Pai**
Memorial Hospital, Hastings, New Zealand.

## ABSTRACT

Spinal osteomyelitis caused by Group B streptococcus is described in a 65–year–old woman. Initially, a polymyalgia was suspected. This diagnosis resulted in a considerable delay in correct diagnosis and treatment. Although the patient recovered with medical treatment, she was left with a gross deformity of the spine.

***Key words:*** *spinal osteomyelitis, Group B streptococcal infection*

## INTRODUCTION

Group B streptococci are a frequent cause of bacteraemia and meningitis in infants less than 2 months of age.[2,4,12] Group B streptococcus normally colonizes the vagina, throat, and stool and is an opportunistic pathogen in patients with underlying medical problems such as diabetes, peripheral vascular disease, renal disease, cancer, and endometritis.[10] The pattern of infection ranges from a transient self-limited bacteraemia in normal persons to overwhelming terminal illness in compromised hosts.[11]

Group B beta haemolytic streptococci (*Streptococcus agalactiae*) have been a rare cause of bone and joint infection in adults. Laster[10] in an extensive review of the literature found only 18 cases of joint and bone infection and reported his experience with 2 cases.

We report a rare case of Group B streptococcus osteomyelitis of T11 and T12 vertebrae in a 65–year–old woman and discuss the problems resulting from delayed diagnosis.

## CASE REPORT

The patient was a 65–year–old Maori female who was admitted acutely 5 months earlier with a 2–week history of progressive pain in both the shoulder girdle and in the lower lumbar region. She consulted her family doctor, who started a course of an anti-inflammatory drug. Her previous medical history revealed a noninsulin-dependent diabetes mellitus that was treated with dietary measures. Initial radiographs of her spine, shoulders and chest were reported as normal. She had an erythrocyte sedimentation rate of 103 mm/h with a white blood count cell 20,000/mm$^3$ (85% polymorphonuclear leukocytes). Blood cultures obtained at that point grew *Streptococcus agalactiae* (Group B beta-haemolytic streptococci) in all 3 bottles tested. A careful investigation, including ultrasound, echocardiogram, urine and blood, did not reveal any localization of infection in the chest, urinary tract, gastrointestinal tract or heart. The screening tests for a collagen disorder (antimitochondrial, antinuclear, antismooth muscle antibodies) were negative.

Address correspondence and reprint requests to: Dr VS Pai, Memorial Hospital, Hastings, New Zealand.

She was begun on empirical intravenous amoxycillin and later oral antibiotics for a total of 11 days. In view of vague musculoskeletal symptoms and the high ESR, polymyalagia was suspected and was treated with high dose prednisone. As she felt symptomatically better, she was discharged on steroids.

Approximately 4 months later she was again admitted with severe back pain with spasms. Her ESR was 30 and WBC was 9600/mm$^3$. An additional diagnosis of osteoarthritis of the spine was made and she was sent home with diclofenac 50 mg BD, dextropropoxyphene and prednisone 10 mg. Her back pain further deteriorated and she was eventually unable to cope at home. She was readmitted 3 weeks later and was referred for orthopaedic assessment.

At the time of the latest admission, the pain was localized to the lower thoracic spine and radiated along the costal margin. She had been feeling unwell and anorexic. She denied any leg pain, weakness or sphincter problems. Examination revealed a severe rigid angulated kyphosis at the level of T11–12. Tenderness was present on deep palpation.

Routine blood and urine tests were normal. The erythrocyte sedimentation rate was 8 mm/h. Three pairs of blood cultures were drawn on the day of the admission. They remained sterile after one week of incubation. Laboratory tests for myeloma were negative.

Plain films showed collapse of T11–T12 with a 45° kyphosis (Fig. 1). A bone scan revealed a markedly increased uptake in the lower thoracic region and, taken in conjunction with the plain film findings, the features were consistent with osteomyelitis. MRI (Fig. 2) showed some canal compromise but adequate room for cord. MRI also showed evidence of an active infection at T11–12. Diagnosis of osteomyelitis of T11–

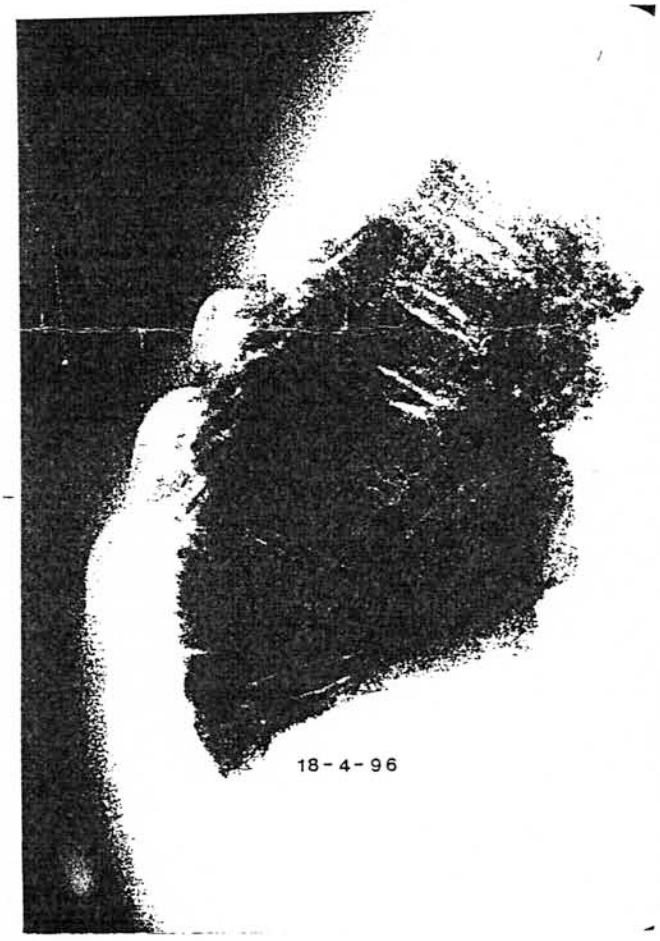


**Figure 1** Lateral radiograph (standing) demonstrating destruction of the T11 and T12 vertebral bodies with bony collapse and segmental kyphosis.


**Figure 2** Sagittal magnetic resonance image showing destruction of the T11–T12 vertebral bodies with minimal spinal canal impingement.

12 was confirmed by percutaneous needle biopsy, under image intensifier, which grew haemolytic *Streptococcus agalactiae* sensitive to penicillin. No growth of mycobacteria was observed on the Lowenstein-Jenssen media.

Specimens for histology were consistent with osteomyelitis and there was no evidence of granulomata or malignancy. The patient declined major operative intervention (anterior decompression and bone graft with posterior stabilization). Because of her poor general health and limited current activity, it was decided to treat her nonoperatively. Treatment was started with intravenous penicillin G (18 million units per day) for 2 weeks, followed by oral penicillin and ciprofloxacin which was continued for 3 months. She was mobilized with a spinal brace and was scheduled to attend clinic appointments at 3–monthly intervals to assess any delayed neurological problems.

## DISCUSSION

*Staphylococcus aureus* has been considered to be the major cause of osteomyelitis and this is true even now in the adult population. Group B streptococcus is a common cause of neonatal infection and it accounts for 69% of bone and joint infections in infants less than 2 months of age.[12] Vertebral osteomyelitis due to this organism in children has been reported.[1,3,7] Although the spectrum of disease caused by this organism has been expanded in neonates, osteomylitis or septic arthritis in adults has until recently been only sporadically reported.[6,8,10]

Invasive Group B streptococcal infection causes substantial morbidity and mortality among adults. In a prospective study, the incidence of Group B streptococcal disease is 4.4/100000 nonpregnant adults/year.[5] The following risk factors have been identified: diabetes mellitus, malignancy, renal failure, alcohol abuse, neurologic impairment. The fatality rate ranges from 21–32%.[4]

Vertebral osteomyelitis is a diagnostic problem and a wide range of working diagnoses can be assigned to patients: pulmonary embolism, myocardial infarction, aortic aneurysm, lumbago, arthritis, disc herniation, cholecystitis, pyelonephritis, meningitis, hysteria, and so forth.[9] In the present case initial presentation was vague. Normal radiological findings and a high ESR led to a diagnosis of polymyalgia. As there was no localization of the primary infective lesion, identification of Group B streptococcus from blood was assumed to be a transient bacteraemia and the patient was treated with a short course of amoxycillin. This resulted in extensive destruction of adjacent vertebrae leading to gross kyphotic deformity of the spine.

The incidence of Group B streptococcal disease is increasing in both nonpregnant women and in men.[5] A high level of suspicion of this organism in patients with the various risk factors should aid early diagnosis. Where rapid access to MRI is not available, bone scan for suspected cases may play a critical role in early diagnosis. Prompt treatment is indicated to prevent permanent deformity of the spine and the development of late onset paraplegia secondary to deformity.

## ACKNOWLEDGEMENT

The author is grateful to Dr Peter Lloyd for his help in preparing the manuscript and Mr Wayne Blair, medical photographer, Memorial Hospital.

No benefits in any form have been received or will be received from any commercial party related directly or indirectly to the subject of this article.

## REFERENCES

1. **Ammari LK, Offit PA, Campbell AB.** Unusual presentation of Group B streptococcus osteomyelitis. *Paed J Infect Dis J* 1992, 11:1066–7.
2. **Barton LL, Feigin RD, Lins R.** Group B beta-haemolytic streptococcal meningitis in infants. *J Pediatr* 1973, 82:719–23.
3. **Bolivar R, Kohl S, Pickering LK.** Vertebral osteomyelitis in children: Report of four cases. *Pediatrics* 1978, 62:549–53.
4. **Edward MS, Baker CJ.** Streptococcus Agalactiae (Group B streptococcus). In: Mandell GL, Dolin R, Bennett JE. *Principles and Practice of Infectious Diseases* (4th ed). New York: Churchill Livingstone, 1995, 1835–45.
5. **Farley MM, Harvey RC, Stull T, Smith JD, Schuchat A, Wenger JD, Stephens DS.** A population-based assessment of invasive disease due to group B streptococcus in nonpregnant adults. *N Engl J Med* 1993, 328:1807–11.
6. **Fasano FJ, Graham DR, Stauffer ES.** Vertebral osteomyelitis secondary to Streptococcus agalactiae. *Clin Orthop* 1990, 256:101–4.
7. **Fox L, Sprunt K.** Neonatal osteomyelitis. *Pediatrics* 1978, 62:535–42.
8. **Ganapathy M.** Group B streptococcal vertebral osteomyelitis with bacteraemia. *Southern Medical J* 1995, 88:350–1.
9. **Klein M, Ahn C, Drum DE, Tow DE.** Gallium 67 scintigraphy as an aid in the detection of spinal epidural abscess. *Clin Nucl Med* 1994, 19:761–2.
10. **Laster AJ, Michels ML.** Group B streptococcal arthritis in adults. *Am J Med* 1984, 76:910–4.

11. **Lerner PI, Gopalkrishna KV, Wolinsky E, McHenry MC, Tan JS, Rosanthal M.** Group B streptococcus bacteraemia in adults: Analysis of 32 cases and review of the literature. *Medicine* 1977, 56:457–73.
12. **Memon IA, Jacobs NM, Yeh TF, Lilien DL.** Group B streptococcal osteomyelitis and septic arthritis. *Am J Dis Child* 1979, 133:921–3.