

Case report

Vertebral osteomyelitis due to *Staphylococcus warneri*

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SUMMARY We report a case of vertebral osteomyelitis in a diabetic woman. This appears to be the first report of such an infection with the coagulase negative staphylococcus, *S warneri*.

Key words: coagulase negative staphylococci.

There has been an increased awareness of infections caused by coagulase negative staphylococci in the past few years. Among the many species of such staphylococci only *S epidermidis* and *S saprophyticus* have been established clearly as having pathogenic potential.¹ These two species have been found to cause urinary tract infections, endocarditis, infections of intravenous catheters, cerebrospinal fluid shunts, peritoneal dialysis catheters, prosthetic joints, vascular grafts, ocular infections after surgery, and have produced bacteraemia in immunocompromised persons.² *S epidermidis* rarely causes osteomyelitis but has been reported after median sternotomy,³ after infection of bone surrounding an infected prosthetic joint,⁴ and as a consequence of infection of a haemodialysis shunt.⁵ A third species of coagulase negative staphylococcus, *S warneri*, is less well known as a cause of sepsis. We report a case of vertebral osteomyelitis caused by *S warneri*.

Case report

An 81 year old woman was admitted to hospital for management of poorly controlled, insulin dependent diabetes mellitus (with recurrent hypoglycaemic attacks), assessment of a confusional state slowly progressive over the preceding 12 months, and for investigation of lower thoracic back pain

that had been present for two weeks. Stabilisation of her diabetes was difficult because she would not eat consistently. She remained afebrile and had a normal white cell count and erythrocyte sedimentation rate (ESR). Standard radiology, computed tomographic scanning, and bone scan examination of her thoracic spine were all thought to be consistent with a crush fracture of T9 secondary to osteoporosis. She was given analgesics and discharged from hospital. A few days later she was readmitted with increasing back pain and uncontrolled diabetes. She was again afebrile, and physical examination showed tenderness over T9. Investigations on admission showed a haemoglobin concentration of 12.5 g/dl (125 g/l), white cell count of $12.5 \times 10^9/l$ (83% neutrophils), ESR of 22 mm/1st h; electrolytes and liver function tests, including serum alkaline phosphatase concentration, were normal. A further x ray of her thoracic spine showed that in the interval the T9–10 disc had been destroyed and that a paravertebral soft tissue swelling had developed. A gallium scan was consistent with vertebral osteomyelitis. The lesion was aspirated by needle biopsy, and microscopical examination of the material obtained showed a moderate number of leucocytes and a few Gram positive cocci. The specimen was cultured aerobically onto blood agar and cystine-lactose-electrolyte deficient plates and anaerobically onto blood agar and blood agar containing gentamicin and palladium chloride plates. An enrichment medium using Robertson's cooked meat broth was also used. A pure growth of a coagulase negative staphylococcus species, identified subsequently as *S warneri* according to the

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scheme of Kloos and Schleifer,¹ was obtained. Six sets of aerobic and anaerobic blood cultures were taken; all were sterile. The organism was sensitive to penicillin, cloxacillin, and gentamicin. She was treated initially with cloxacillin, but after the organism was identified and its antibiotic sensitivities ascertained benzylpenicillin 600 mg was administered intravenously at six hourly intervals. This regimen was continued for 10 days then replaced by the oral administration of phenoxymethylpenicillin 1 g four times a day. Antibiotic administration was continued for three months. The mildly raised white cell count returned rapidly to normal, and the ESR continued within normal limits, but the serum alkaline phosphatase level rose to a peak of 664 U/l one month after admission. A repeat gallium scan six weeks after initiation of therapy indicated reduced gallium uptake. *x* Ray of her thoracic spine after a further 10 weeks showed kyphosis and fusion of the two affected vertebrae. Her pain settled, and she remained afebrile throughout the course of the illness.

Discussion

The diagnosis of osteomyelitis is a well recognised trap for the unwary and was made doubly difficult in this patient by the lack of fever, a normal ESR, and a largely normal white cell count. The most unusual feature in this instance, however, was its causation by *S warneri*. The Gram positive cocci seen on microscopy of pus are consistent with this bacterium, the organism was grown in pure culture from both direct and enrichment media, and extensive investigations failed to show any other organisms. *S warneri* is one of 16 species described by Kloos and Schleifer within the genus *Staphylococcus*.¹ This Gram positive coccus characteristically ferments sucrose, trehalose, maltose, and fructose, but not xylose, mannitol, xylitol, and lactulose, and has a variable reaction with ribose. Furthermore, it has a

negative nitrate reaction and is susceptible to the antibiotic, novobiocin. The pathogenic potential of *S warneri* has been related clearly only to bacterial endocarditis; in that instance infection followed vasectomy in a 32 year old patient and finally necessitated aortic valve replacement.⁶ *S warneri* has been possibly associated with urinary tract infection in one further patient.⁷ About 50% of individuals carry *S warneri*, and it contributes about 1% to the normal staphylococcal population of the skin.⁶ This patient was administering insulin percutaneously to herself, and this may have provided the portal of entry. As far as we are aware this is the first report of a case of osteomyelitis unequivocally due to *S warneri*. This report exemplifies the need for laboratories to identify carefully coagulase negative staphylococci isolated from sites that are normally sterile.

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