NOTES

Peptostreptococcal Vertebral Osteomyelitis

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The clinical course of a patient with vertebral osteomyelitis caused by Peptostreptococcus micros is described. The organism was isolated on two occasions from lumbar vertebral biopsies and was visualized in histologic sections of one of the biopsies. The patient had no apparent infections at other body sites. The infection was eradicated after 6 weeks of intravenous clindamycin therapy.

Published reports of vertebral osteomyelitis caused by obligately anaerobic bacteria are extremely rare. We recently cared for a patient with Peptostreptococcus micros osteomyelitis of the lumbar spine.

Case report. A 70-year-old man was admitted to the hospital with severe low back pain of 3 months duration. The pain developed the morning after he performed routine maintenance on his car; it was most severe with weight bearing and improved when lying flat with knees flexed. He noted a 15- to 20-lb. (6.8 to 9.1 kg) weight loss, without anorexia, in the 4 to 6 weeks after the pain began. He had been hospitalized 2 months previously, at which time he had occasional temperature elevations to a maximum of 38.2°C, and a mild leukocytosis with a slight left shift. Roentgenograms of the lumbosacral spine were unremarkable. A bone scan revealed slight uptake in the lower lumbar spine. Abdominal computerized axial tomograms revealed degenerative changes in the lumbar spine and sacroiliac joints. He was discharged with a diagnosis of degenerative disk disease of unknown etiology. In the interim, a lumbosacral corset and physical therapy provided initial relief, but the pain increased progressively. The patient experienced several episodes of chills and night sweats but denied fever. His past medical history was remarkable for cataract operations, transurethral resection of the prostate, and a right inguinal herniorrhaphy.

Physical examination revealed an elderly gentleman with lumbar spine tenderness, marked limitation of motion in the lower back, and normal vital signs. During this hospitalization the patient had temperatures as high as 38.2°C orally on several occasions, and experienced night sweats once. Leukocyte counts varied from 7.2 × 10^3 to 8.7 × 10^3/mm^3; there was an increase in the proportion of band cells (10 to 34%). A Westergren erythrocyte sedimentation rate was 103 mm/h (normal is 0 to 13 mm/h).

A bone scan showed increased uptake in the lower lumbar spine which reflected interval worsening from the study 2 months earlier. Roentgenography of the lumbar spine revealed complete loss of the L4-L5 joint space with gross irregularities in the superior end plate (Fig. 1). Abdominal computerized axial tomograms revealed destructive changes in the body of the fourth lumbar vertebra and evidence of an adjacent soft tissue mass (Fig. 2).

Tissue obtained from the affected area by needle biopsy was submitted for pathologic and microbiologic study. Histologic examination revealed fibrosis, chronic inflammation, lymphoplasmacytic infiltration, focal bone destruction, hyperostosis, and new bone formation. Additionally, gram-positive cocci were seen on Gram-stained histologic sections of the vertebral biopsy (Fig. 3). Specimens for anaerobic culture were submitted in anaerobic transport vials (Anaport; Scott Laboratories, Fiskeville, R.I.), inoculated to anaerobic Centers for Disease Control blood and phenylethyl alcohol blood agars and thioglycolate broth (Remel, Lenexa, Kans.), and incubated anaerobically for 48 h (BioBag type A; Marion Scientific, Kansas City, Mo.). Obligately anaerobic gram-positive cocci with a size suggesting that they were P. micros were recovered from primary cultures and from subcultures of thioglycolate broth. The isolate was classified as a Peptostreptococcus sp. by the API 20A system (Analytab Products, Plainview, N.Y.) and as P. micros by the RapID-ANA system (Innovative Diagnostic Systems, Inc., Atlanta, Ga.). The RapID-ANA system is a credible method for identifying anaerobic gram-positive cocci to species (5). The identification of P. micros was accepted based on the high probability (>99.99%) identification with RapID-ANA and the characteristic size of the organism on Gram stain. The organism was susceptible to carbencillin, chloramphenicol, clindamycin, penicillin, and metronidazole by the Kurzynski modification of the broth-disk elution method in thioglycolate broth (8). Fungal, mycobacterial, and aerobic bacterial cultures were negative.

Six days after the needle biopsy, the patient underwent an open biopsy and debridement of the L4-L5 disk space. The tissue anterior to the spine was boggy and edematous, but there was no well delineated abscess. Anaerobic cultures once again produced P. micros; no aerobic bacteria, fungi, or mycobacteria were recovered. Histopathology was once again consistent with chronic osteomyelitis.

The patient was initially treated empirically with nafcillin. After antimicrobial susceptibilities were reported, therapy was changed to clindamycin (900 mg intravenously every 8 h for 6 weeks). Follow-up 5 months after treatment revealed no roentgenographic progression of lumbar disease, total

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abatement of back pain, and no constitutional signs of infection.

Culture-proven anaerobic vertebral osteomyelitis is rare. An extensive review (7) of pyogenic vertebral osteomyelitis revealed that only 5 of 154 (3%) bacterial isolates were anaerobes; 3 of the 5 anaerobic isolates came from a single patient who developed a mixed aerobic-anaerobic infection following an abdominal gunshot wound. The five anaerobic isolates included three Propionibacterium spp., one Bacteroides fragilis, and one Peptostreptococcus magnus. The most common aerobic isolates were Staphylococcus aureus and Escherichia coli (55 and 10%, respectively, of all isolates).

A separate review (4) of anaerobic osteomyelitis included 12 vertebral infections (six Bacteroides spp., two Fusobacterium spp., one Propionibacterium sp., and three unspecified). Half of these infections involved the coccyx. In most cases anaerobic vertebral osteomyelitis resulted from direct extension of an infected wound, or from bacteremia secondary to wound infection. In contrast, vertebral osteomyelitis due to aerobic bacteria is most commonly associated with bacteremia secondary to urinary tract infection or gen-

FIG. 1. Roentgenograms of lumbar spine. (a) Normal L4-L5 intervertebral disk space (arrows); (b) absence of L4-L5 disk space (arrow) in roentgenogram taken 2 months after that shown in panel a.

FIG. 2. Abdominal computerized axial tomogram showing destructive changes in the vertebral body of L4 (black arrows) and a surrounding soft tissue mass (white arrow).

FIG. 3. Gram-stained histologic section of vertebral biopsy showing scattered gram-positive cocci (arrows). ×1,080.
itourinary instrumentation (7). Soft tissue and respiratory tract infections were also commonly associated with aerobic vertebral osteomyelitis.

Reports of actinomycotic vertebral osteomyelitis were common before 1950 (4). This disease is now rare, presumably because of widespread use of beta-lactam antibiotics. The diagnosis is usually based on clinical or pathologic features rather than culture. Actinomyotic vertebral osteomyelitis is almost always associated with concurrent cervicofacial, thoracic, or abdominal infections.

Before 1970, cultures from patients with vertebral osteomyelitis were frequently negative (6). This raised suspicions that anaerobic or fastidious bacteria are more commonly the etiologic agents of vertebral osteomyelitis than were documented by culture. Recently, three cases of vertebral osteomyelitis caused by fastidious bacteria (\textit{Haemophilus aphrophilus, Eikenella corrodens}, and an organism resembling \textit{Actinobacillus actinomycetemcomitans}) were reported (2). Despite significant improvements in anaerobic culture techniques, however, culture-proven anaerobic vertebral osteomyelitis remains rare.

We have found only one well documented case of vertebral osteomyelitis due to anaerobic gram-positive cocci (7). This occurred as a mixed aerobic-anaerobic infection secondary to an abdominal gunshot wound. The case we report here illustrates a destructive chronic infection due to \textit{P. micros}. The patient had no apparent infections at other body sites. He did, however, undergo a transurethral prostate resection and a right inguinal herniorrhaphy approximately 12 months, and 3 months, respectively, preceding his initial complaint of back pain. Genitourinary instrumentation has been implicated in the pathogenesis of vertebral osteomyelitis due to aerobic bacteria, presumably by producing a transient bacteremia that seeds the affected vertebrae (7). The presence of anaerobic gram-positive cocci as common members of the indigenous urethral and skin microflora raises the possibility that bacteremia associated with the herniorrhaphy or genitourinary manipulation contributed to the pathogenesis of peptostreptococcal vertebral osteomyelitis reported here (1, 3).

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