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NOTES

Cervical Osteomyelitis Caused by *Pseudomonas cepacia* in an Intravenous-Drug Abuser

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We report a case of vertebral osteomyelitis caused by *Pseudomonas cepacia* in a patient with a history of intravenous-drug abuse. *P. cepacia* infections are usually nosocomial, although community-acquired infections occur more commonly in intravenous-drug abusers than in the general population. Vertebral osteomyelitis caused by *P. cepacia* has not previously been reported.

Pyogenic vertebral osteomyelitis has recently gained increasing recognition, especially in intravenous-drug abusers. Gram-negative bacilli are common pathogens (7), but vertebral osteomyelitis caused by *Pseudomonas cepacia* has not previously been reported. We report a case of *P. cepacia* vertebral osteomyelitis in an intravenous-drug abuser which was successfully treated with antibiotics.

A 59-year-old male with a past history of intravenous-heroin abuse was admitted for evaluation of severe neck pain. Four months earlier he had developed soreness in the posterior cervical region exacerbated by movement of his head. One month before admission he sustained neck trauma in a motor-vehicle accident. The neck pain worsened, with radiation down his left arm and into his upper back.

His past medical history was significant for cervical osteomyelitis caused by *Serratia marcescens* in 1975. There was no history of hypertension, diabetes mellitus, tuberculosis, or heart disease. His last tuberculin skin test in the 1950s was negative. He smoked one-half pack of cigarettes per day and denied intravenous-drug use since 1975. He also denied excessive alcohol consumption.

A physical examination revealed a well-developed, well-nourished man. His temperature was 98.8°F (ca. 37.1°C), his blood pressure was 176/96, his heart rate was 100 beats per minute, and his respiratory rate was 16 per minute. Positive findings were limited to the spine. There was tenderness upon palpation in the cervical spine at the level of C4, with a marked limitation in the range of motion in all directions, and tenderness upon palpation in the lumbosacral region. A laboratory evaluation, including a complete blood count, was normal except for X rays of the spine. There was a lytic lesion at C4 to C5, surgical clips and fusion of the vertebral bodies at C6 to C7, and narrowing of the disk space and erosion of the vertebral end plates at L4 to L5. A bone scan showed early uptake in the posterior cervical spine and uptake at 4 h in the lumbosacral area.

A cervical bone biopsy under fluoroscopic guidance showed acute and chronic osteomyelitis. Culturing of the specimen yielded *P. cepacia*. The isolate was identified as API 5206004 (at 24 h) and 5306007-43 (at 48 h) by the API 20E system (Analytab Products, Plainview, N.Y.) and was confirmed as *P. cepacia* by the microbiology laboratory of the New York City Department of Health. Disk sensitivities were determined by the Kirby-Bauer method, and MICs and MBCs were determined by a broth dilution method (Table 1).

The patient was given sulfamethoxazole (1,200 mg)-trimethoprim (240 mg) and cefoperazone (2 g) intravenously every 6 h for 5 weeks. Neck pain resolved completely, and the full range of motion was restored. Repeat roentgenograms after 3 weeks of therapy showed no further destruction of the cervical spine. The patient was discharged and monitored as an outpatient. He remained without evidence of infection 6 months later.

Vertebral osteomyelitis often is a complication of intravenous-drug abuse. The presentation and microbiological features of osteomyelitis in drug abusers are often different from those in the general population. These differences may contribute to a delay in diagnosis and institution of appropriate therapy (2, 6).

In the general population, cases of osteomyelitis can be classified into those secondary to a hematogenous infection, those secondary to a contiguous focus of infection, and those associated with peripheral vascular disease. Osteomyelitis in adults is most commonly caused by spreading from a contiguous focus of infection. Of interest is that in the general population, hematogenous osteomyelitis has a predilection for the vertebral column (9).

Vertebral osteomyelitis in intravenous-drug abusers usually occurs in patients between 20 and 49 years of age, in contrast to its predominance in non-drug-abusing patients over 50 years of age (7). The lumbar area is most commonly involved (54% of patients), followed by the cervical (27% of patients) and thoracic (5% of patients) areas (7).

In one review, organisms were isolated from bone, blood, or abscess cultures from 64 of 67 patients (7). A total of 83% were gram-negative bacilli, and most of the remainder were identified as *Staphylococcus aureus* (15.5%). *Pseudomonas* species accounted for 65.5% of all isolates. Of the 42 *Pseudomonas* isolates, 37 were further categorized as *P. aeruginosa*, and 5 were categorized only as *Pseudomonas* species.

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TABLE 1. Antimicrobial susceptibility of *P. cepacia* isolates

Antimicrobial agent	Disk sensitivity[a]	MIC (μg/ml)	MBC (μg/ml)
Ampicillin	R	ND[b]	ND
Cephalothin	R	ND	ND
Cefoxitin	R	ND	ND
Cefsulodin	R	ND	ND
Carbenicillin	R	ND	ND
Gentamicin	R	ND	ND
Tobramycin	R	ND	ND
Kanamycin	R	ND	ND
Amikacin	R	ND	ND
Tetracycline	R	ND	ND
Moxalactam	I	32	32
Chloramphenicol	S	8	16
Trimethoprim-sulfamethoxazole	S	0.5/9.5	2/38
Cefoperazone	S	31.2	62.4
Piperacillin	ND	16	32

[a] Determined by the Kirby-Bauer method; S, sensitive; R, resistant; I, intermediate.
[b] ND, Not done.

P. cepacia is a gram-negative, motile, aerobic, catalase-positive bacillus. It produces acid from glucose, fructose, galactose, mannose, xylose, lactose, maltose, and mannitol and produces a positive lysine decarboxylase reaction. It fails to produce acid from rhamnose or gas from nitrate, but it produces a negative arginine dihydrolase reaction. The organism has a ubiquitous distribution in soil and water but has been implicated infrequently as a cause of human infections. Infections with *P. cepacia* are most commonly nosocomial (1, 3–5). Although *P. cepacia* is considered an unusual community-acquired pathogen, intravenous-drug abusers appear to be at greater risk of *P. cepacia* infections than the general population (5).

Treatment of osteomyelitis over several weeks with high doses of parenteral antibiotics is usually successful (7). Our patient responded to trimethoprim-sulfamethoxazole and cefoperazone. We were able to find only one previous report of osteomyelitis, caused by *P. cepacia* in which postoperative sternal osteomyelitis and mediastinitis were treated with open drainage, debridement, and chloramphenicol (8). To our knowledge, vertebral osteomyelitis caused by *P. cepacia* has not previously been reported. This report shows that *P. cepacia* should be added to the list of gram-negative bacilli that may cause vertebral osteomyelitis.

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