Septic Arthritis Caused by *Kingella kingae*

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A normal part of the oral flora, *Kingella kingae* has seldom been recognized as the cause of serious clinical infections. We report a case of documented septic arthritis caused by *K. kingae* in an otherwise healthy infant. We suggest that it may be more common than thought based on the general unfamiliarity with this organism and the fact that several dozen clinical isolates have been identified by reference laboratories.

*Kingella kingae*, a short gram-negative rod, is part of the normal oropharyngeal flora, but it has rarely been implicated as a cause of clinical infections. It has been classified in the genus *Moraxella* in spite of significant differences from *Moraxella* spp., and recent studies have prompted placement in the separate genus *Kingella* (1, 2, 7). We describe an infant who had septic arthritis caused by this organism and who was cured with a course of parenteral and oral chloramphenicol. The apparent rarity of documented cases may be partly a manifestation of clinical unfamiliarity and the fastidious nature of the organism which make identification difficult.

**Case report.** A 10-month-old female infant was hospitalized with a 4-day history of congestion, cough, and fever. The day before admission, the child did not spontaneously move the right arm and cried when the arm was moved passively. Growth and developmental milestones were normal, and past medical history revealed only a single episode of otitis media at the age of 7 months.

Physical examination showed an irritable infant who did not spontaneously move her right arm. The rectal temperature was 38.5°C. The right wrist was warm and swollen. There was apparent discomfort when the wrist joint was palpitated and moved passively.

Laboratory data showed a peripheral leukocyte count of 7,700/ml, with 32 segmented neutrophils and 2 band forms. Erythrocyte sedimentation rate was 50 mm/h as determined by the Westergren method. A radiograph of the wrist was normal. An arthrocentesis yielded 0.5 ml of purulent joint fluid which on Gram stain revealed abundant neutrophils and rare short, plump gram-negative rods. Subsequently, we observed pure growth on chocolate and sheep blood agar in 10% CO2 of the organisms, which had Gram stain characteristics identical to those observed on the initial joint fluid smear. The organism was eventually identified as *K. kingae*, in accordance with the protocol of the Special Bacteriology Section of the Centers for Disease Control, Atlanta, Ga. (9). Two blood cultures obtained after joint aspiration were sterile. Cerebrospinal fluid examination was normal, and cultures revealed no growth. The child was given intravenous chloramphenicol based on a presumptive diagnosis of *Haemophilus influenzae* septic arthritis. Within 3 days, there was rapid resolution of fever and joint swelling and tenderness. On hospital day 8, the child's regimen was changed to oral chloramphenicol (150 mg orally, four times a day), and a 3-week course of therapy was completed uneventfully.

**Discussion.** *K. kingae* has been infrequently reported as a cause of clinical infections. It has been isolated from blood, noses, skin lesions, and an abscess of the eyelid (1, 9, 14). A literature search disclosed only two previously reported cases of *K. kingae*-associated arthritis (4, 11). Joint fluid isolation of *K. kingae* was achieved, however, in only one of these cases, a 13-year-old male with septic arthritis of the hip joint (4). The same authors also reported two cases of *K. kingae* osteomyelitis. Two other reports of *Moraxella* sp. septic arthritis were difficult to interpret because appropriate bacterial speciation was not performed (12, 13). The Centers for Disease Control has accumulated 75 clinical isolates of *K. kingae*, of which 21 are from bone or joint sites (14). The paucity of documented cases of septic arthritis may be more apparent than real and may reflect problems of recognition and identification.

There have been five reported cases of endocarditis caused by *K. kingae* (3, 5, 8, 10). Initial diagnosis has not been easy because of the difficulty in blood culture isolation. *K. kingae* and other similar fastidious Gram negative bacilli, e.g., *Cardiobacterium hominis, Haemophilus* spp., and *Actinobacillus actinomycetemcomi-
prolonged blood culture culture-negative endocarditis and should prompt prolonged blood culture incubation.

The source of the organism in our patient, as in many of the reported cases, is uncertain, but *K. kingae* has been isolated from the nasopharynx as part of the normal flora (6). Our patient did have symptoms of an upper respiratory tract infection, and one could speculate that this infection resulted in *K. kingae* bacteremia.

Antibacterial susceptibility testing has been limited. The organism has been uniformly susceptible when tested against penicillin, ampicillin, erythromycin, tetracycline, trimethoprim-sulfamethoxazole, and chloramphenicol (4, 10, 11). Penicillin would appear to be the antibiotic of choice. Antibiotic disk susceptibility testing could not be performed on our isolate because the isolate grew only slowly in 10% CO₂.

The finding of a gram-negative bacillus with rather typical morphology in clinical material should make one consider *K. kingae* in the identification process. Such awareness may better define the role of the organism as a human pathogen. The limited data from the Centers for Disease Control suggest that it may not be as uncommon as reflected by the few published reports.

LITERATURE CITED