Recovery of *Kingella kingae* from Blood and Synovial Fluid of Two Pediatric Patients by Using the BacT/Alert System

*Kingella kingae* is a fastidious gram-negative rod first described in the early 1960s, known to colonize the upper respiratory tract. It is involved in human infections, including bone and joint diseases (1, 3, 6, 7, 9, 10, 12), bacteremia (8), septicaemia (4), and endocarditis (5), mostly in infants and children (2, 10, 12, 13).

Direct isolation of *K. kingae* on solid media is difficult. Inoculations of synovial fluid specimens into BACTEC blood culture bottles or Isolator 1.5 microbial tubes were reported to enhance the recovery of this fastidious organism from children with septic arthritis (11, 12).

Here we report two cases in which *K. kingae* was recovered by using the BacT/Alert system (Organon Teknika). In the first case, a synovial fluid specimen was obtained from an 18-month-old infant with septic arthritis of the knee. The specimen was plated onto solid blood agar medium, and in addition a small amount of synovial fluid, which was not accurately measured, was inoculated into a Pedi-BacT aerobic culture bottle (pediatric bottles containing 20 ml of enriched medium). All the cultures were maintained at 37°C. No bacterial growth was obtained on solid medium, even after 48 h. On the other hand, after 1 day the specimen cultured in broth gave rise to a short gram-negative rod in small chains or in pairs, suspected to be *K. kingae* on the basis of its microscopic characteristics. This isolate was subcultured on sheep blood agar and MacConkey agar. Typical convex colonies with some brownish pigment were observed deeper inside the sheep blood agar, with faint beta hemolysis. No growth was observed on MacConkey agar. Biochemical characteristics included a positive oxidase reaction; ability to ferment glucose and maltose but inability to form acid from lactose and sucrose; and negative results for urease, catalase, esculin and gelatin hydrolysis, indole production, and nitrate reduction. The organism was susceptible to a wide range of antibiotics (β-lactam drugs, macrolides, tetracycline, chloramphenicol, co-trimoxazole, and quinolones) as determined by the disk diffusion method with Mueller-Hinton agar media. In addition, the organism was confirmed to be β-lactamase negative by using Cefinase paper discs for the detection of β-lactamase enzymes (BBL, Becton Dickinson Microbiology Systems).

The second case involved a 10-month-old infant presented at Rambam Medical Center with fever with no obvious focus. A blood specimen was cultured in the BacT/Alert system, and after 24 h bacterial growth was detected and then subcultured in solid sheep blood medium. The organism had characteristics identical to those described above. Cultures from both patients were confirmed as *K. kingae* by Dr. Yagupsky’s reference laboratory at Ben-Gurion University, Beer Sheva, Israel (10–13).

*K. kingae* is a fastidious microorganism that requires special techniques to be identified. Recently, there have been a few reports of different systems that detected this organism (11, 12), but to the best of our knowledge, this is the first report of isolation of *K. kingae* from either synovial fluid or blood by using the BacT/Alert system.

It is known that in some cases of septic arthritis, bacteria are not isolated from synovial fluid. This may be partially explained by the difficulty of isolating certain bacteria by using conventional cultures. The difficulty of growing *K. kingae* primarily on solid media reinforces the idea that synovial fluid should be cultured in an enriched liquid medium. Possibly, inhibitory factors present in synovial fluid may suppress the growth of *K. kingae*. Dilution of synovial fluid by liquid media apparently enhances the chances of isolating the bacterium and facilitates the growth of *K. kingae* on solid blood agar medium. The practice of culturing synovial specimens by using broth blood culture systems or the Isolator microbial tube is recommended. The awareness of clinicians and laboratories will allow faster detection of *K. kingae*, thus preventing serious infections.

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**REFERENCES**


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