A Man with a Prosthetic Aortic Valve and Subacute Calf Pain

(See page 608 for Photo Quiz)

Figure 1. Gram stain of the isolate from a blood culture (original magnification, 1000x) showing gram-negative rods with both filamentous (arrow) and dumbbell-shaped (arrowheads) morphologies characteristic of Cardiobacterium hominis.

Diagnosis: Cardiobacterium hominis prosthetic valve endocarditis.

_C. hominis_ is one of the fastidious gram-negative bacteria that belong to the HACEK group of organisms (Haemophilus parainfluenzae, Haemophilus aphrophilus, Haemophilus paraprophilus, Actinobacillus actinomycetemcomitans, _C. hominis_, Eikenella corrodens, and Kingella kingae). Tucker et al. [1] first reported it as a cause of endocarditis in 1962. The HACEK group are part of the normal oropharyngeal flora. Poor dentition and/or having undergone dental work within the past 6 months have been described as sources of infection [2]. HACEK organisms cause ~3% of cases of infective endocarditis [3]. One study found that it takes, on average, 3.4 days (range, 1–10 days) to grow these organisms with automated blood culture systems [3].

On Gram stain, _C. hominis_ appears as teardrop- and dumbbell-shaped gram-negative rods. Figure 1 demonstrates the filamentous form of this organism. Classically, one can see a rosette shape on the Gram stain. The other gram-negative HACEK organisms have their own characteristics on Gram stain. Both _A. actinomycetemcomitans_ and _Haemophilus_ species are small coccobacillary rods, but, with the latter, one can occasionally see filamentous forms. _E. corrodens_ typically appears as slender straight rods with round ends. _K. kingae_ appears as short straight rods with square ends that form pairs and chains [4]. Biochemical testing of _C. hominis_ usually reveals it to be oxidase positive, indole positive, and catalase negative; _E. corrodens_ and _K. kingae_ are oxidase positive, whereas _Haemophilus_ species and _A. actinomycetemcomitans_ are oxidase negative. _A. actinomycetemcomitans_ is the only catalase-positive organism in the HACEK group [4].
The patient underwent bioprosthetic aortic valve replacement and completed a 6-week course of intravenous ceftriaxone. He remains healthy after 1 year of follow-up.

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