Acinetobacter spp L-form infection of a cemented Charnley total hip replacement

Clinically significant bacterial L-forms have been much sought for but seldom detected.1,2 We know of only one British report which describes the isolation of L-forms from osteomyelitic bone tissue (four cases of Staphylococcus aureus osteomyelitis)3 and of one report in the world literature of a seemingly clinically significant L-form of Acinetobacter spp4 isolated from a case of endocarditis.

The patient, a 29 year old woman had undergone a left cemented Charnley total hip replacement when she was 25 years of age for osteoarthritic secondary to congenital dislocation of the hip. Primary wound healing occurred and the joint became painless. Three years later, she developed an abscess in the scar. The abscess recurred repeatedly over the following six months despite aspiration, surgical drainage, and a prolonged course of oral cephaloridine. No organism was isolated from a number of pus specimens. When radiographic bony lysis appeared around the trochanteric wires, the abscess cavity, affected bone, and wires were excised.

Histological examination showed a pyogenic abscess in the subcutaneous tissues surrounded by fibrous scar tissue. Specimens of pus, soft tissue, bone and wire were collected at the time of surgery and processed within half an hour. Microscopical examination of Gram stains of these specimens showed pus cells but no organisms. No bacterial growth occurred from specimens inoculated directly on to solid media and into cooked meat medium at 24 hours. Contrary to the routine drill in the laboratory, the cooked meat cultures were retained for prolonged culture. At four days, subculture on to chocolate agar showed pin-point colonies on the plate pertaining to the specimen of wire. On Gram, Giemsa staining, and wet preparation, the organisms consisted of large spherical bodies and had the appearance of an L-form (figure). It showed improved growth on chocolate and 10%, sucrose agar, and three separately isolated cultures on serial subculture reverted to a Gram negative coccobacillus. Using an API 20 NE this bacterium was reliably identified as Acinetobacter calcoaceticus var. anitratus.

Acinetobacter spp seems to be a most unusual cause of infection in a cemented hip replacement, for we know of no previous report of this organism as a cause of an orthopaedic prosthetic infection. This organism has been recognized as causing infections in association with other implanted devices where the skin has been supposed to be the source of infection.

We speculate that our Acinetobacter calcoaceticus L-form was induced at the site of the prosthesis as a result of prolonged β-lactam producing antibiotics. Isolation of the organism may have been facilitated on this occasion by prolonged culture (four days) which is not the routine in our laboratory for such specimens. This case emphasises the need to identify cases caused by fastidious organisms such as L-forms whose detection may require extended culture and special media.

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