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# Radiometric Detection of Mycobacteria in Routine Blood Cultures

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*Mycobacterium chelonei* subsp. *abscessus* was detected radiometrically in routine blood cultures. The organism was detected in two patients without the use of special mycobacteriological media.

The clinical microbiology laboratory does not normally look for, nor even consider, the possible presence of acid-fast bacilli in a routine blood culture. Procedures for the isolation of these organisms usually involve an extended period of incubation and the use of media specific for their growth. This report should alert the clinical microbiology laboratory to the growing possibility of finding certain mycobacteria, members of the rapid growers, during the course of a routine blood culture procedure.

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During the fall of 1978, *Mycobacterium chelonei* subsp. *abscessus* was isolated from the blood of two patients in our hospital. The first case was a 74-year-old white female with adenocarcinoma of the cecum and pancytopenia of undetermined etiology. The second case was a 64-year-old white female with chronic granulocytic leukemia. The patients were immunosuppressed because of their underlying diseases. In both cases, a *Mycobacterium* sp. was first detected during the course of a routine blood culture after 6 days of incubation. At the time these cultures became positive, a mycobacterial disease had not been considered. Our procedure utilized a semiautomated radiometric system, BACTEC (model 460; Johnston Laboratories, Inc., Cockeysville, Md.), which has achieved wide acceptance in the clinical microbiology laboratory.

The Gram stain made from a positive aerobic bottle (BACTEC 6B) on the first patient showed gram-positive rods. These rods did not look like diphtheroids, a frequent contaminant of blood cultures. Their beaded appearance, described as "moth eaten," suggested that we do an acid-fast stain, a procedure not previously performed at the blood culture station in our laboratory. Both the Ziehl-Neelsen and fluorochrome stains showed the presence of acid-fast bacilli. A subculture of the blood culture bottle on chocolate agar produced colonies only after 72 h of incubation. This plate was submitted to our mycobacteriology laboratory and, following routine procedures, was reported as a member of the "Fortuitum complex." Further characterization by our laboratory, the Illinois Department of Public Health, and the mycobacteriology laboratory at National Jewish Hospital, Denver, Colo., identified this organism as *Mycobacterium chelonei* subsp. *abscessus*. Of the next 16 blood cultures from this patient, 12 yielded this acid-fast organism. In every instance, the organism was found in the aerobic bottle (6B) only at the reading on day 6. Our laboratory obtains readings on days 1, 2, 3, 4, and 6. The BACTEC readings, which had been negative before day 6, ranged from 37 to 57, with an average of 44. We used the manufacturer's recommendation (a reading of 30 or more) as a guide for examining potentially positive aerobic bottles.

A few weeks later, a Gram stain from a positive BACTEC bottle on the second patient showed peculiar-looking gram-positive rods. With the knowledge gained from the success of the first case, an acid-fast stain was done. The organisms were shown to be acid-fast bacilli and subsequently were identified as *Mycobacterium chelonei* subsp. *abscessus*. Multiple cultures of the second patient's blood, bone marrow, subcutaneous nodules, and sputum were positive for this rapid grower. Again, this *Mycobacterium* sp. was first detected by BACTEC at day 6 with several culture readings from 35 to 55. Subcultures from these bottles, on chocolate agar, produced colonies only if allowed to incubate for at least 72 h.

This represents the first report of radiometric detection of a *Mycobacterium* sp. by utilizing routine blood culture medium. Blood culture methods which rely on visible turbidity, hemolysis, gas production, or growth on chocolate agar 24 to 48 h after "blind" subculture might miss a bacteremia with these mycobacteria. Cases of

nontuberculous mycobacterial disease have become a significantly larger proportion of all mycobacterial infections (1, 5). The rapidly growing mycobacteria have been implicated in numerous outbreaks, usually in the postoperative setting and as isolated infections in immunologically compromised hosts (2–4). The clinical microbiology laboratory, therefore, should be alerted to the fact that these acid-fast bacilli can grow in some routine media. If the Gram stain from a positive aerobic blood culture bottle shows peculiar gram-positive rods with beading and there is no growth either aerobically or anaerobically 24 to 48 h after subculture, an acid-fast stain is recommended.

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