Isolation of *Haemophilus aphrophilus* from an Adult with Acute Leukemia

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During the course of treatment for acute myelocytic leukemia, *Haemophilus aphrophilus* was isolated from eight blood cultures associated with the clinical picture of bacterial endocarditis.

Infections due to *Haemophilus aphrophilus* are rare and generally encountered in the setting of endocarditis, brain abscess, or respiratory tract infections (5). To the best of our knowledge, documented *H. aphrophilus* bacteremia in a patient with acute myelocytic leukemia has not been reported.

A 67-year-old white female was transferred to Strong Memorial Hospital (Rochester, N.Y.) because of the suspect diagnosis of acute myelocytic leukemia. A bone marrow examination, showing approximately 90% myeloblasts in the marrow, confirmed the diagnosis. After two courses of combination chemotherapy (cytosine arabinoside and daunomycin), bone marrow aplasia persisted for approximately 20 days, after which the leukocyte and platelet count began to rise. At this time temperature elevation to 103°F (39.4°C) developed and 12 blood cultures were drawn over a 3-day period. Eight were positive for *Haemophilus*, species unknown, later identified as *H. aphrophilus*. At the same time, a chest film was suggestive of septic pulmonary emboli. Many erythrocytes per high-power field were present on urinalysis, and deterioration in renal function developed. Because of the sensitivity of the isolated *H. aphrophilus* to ampicillin, the patient was treated with 9 g of ampicillin intravenously daily for the next 17 days. Before the patient was discharged, the intravenous ampicillin was changed to oral amoxicillin (500 mg every 6 h), which was continued for 4 weeks. On discharge, the patient had achieved a complete remission of her acute myelocytic leukemia.

The 12 blood cultures drawn over a 3-day period were processed with the Bactec model 225 (Johnston Laboratories, Cockeysville, Md.) for rapid, automated detection of bacterial growth. The blood cultures were maintained at 36 to 37°C. Of these 12 blood cultures, eight were positive for *H. aphrophilus*. Six of the positive cultures were from anaerobic (Eh, 150 mv) tryptic soy broth containing yeast extract, hemin, vitamin K, l-cysteine, sodium polyanethol sulfonate, 14C-labeled substrates with a pH of 7.3 ± 0.2, and a vial atmosphere of 5% CO2 and 10% H2 in nitrogen. The remaining two positive cultures were from aerobic tryptic soy broth containing hemin, vitamin K, sodium polyanethol sulfonate, 14C-labeled substrates with a pH of 7.3 ± 0.2, and a vial atmosphere of 5% CO2 in air. The positive cultures were then plated on blood, chocolate, and MacConkey agars. In 24 to 48 h, small gram-negative bacilli were growing on the blood and chocolate agar but not on MacConkey agar. Hemin (X factor) and nicotinamide adenine dinucleotide (V factor) enhancement was determined by using paper strips containing nicotinamide adenine dinucleotide and hemin (7). Growth of the isolated *Haemophilus* was enhanced by hemin but not by nicotinamide adenine dinucleotide. In addition, the *Haemophilus* was not hemolytic on rabbit blood agar, was oxidase and catalase negative, did not grow on MacConkey agar, reduced nitrates, and was glucose, lactose, maltose, and sucrose positive. The New York State Laboratory in Albany verified the isolated *Haemophilus* species as *H. aphrophilus*.

Difficulties experienced in some laboratories in identifying *H. aphrophilus*, as noted by Elster et al. (2), probably reflect more a lack of experience with this organism, as in our case, rather than technical problems in isolation. However, *Actinobacillus actinomycescomitans, Eikenella corrodens* (HB-1), and *H. haemoglobinophilus* closely resemble *H. aphrophilus* (1, 3, 7). *A. actinomycescomitans* is differentiated from *H. aphrophilus* by failure to ferment lactose and sucrose, ability to ferment mannitol and xylose, and production of catalase (4). *E. corrodens* is differentiated by its inability to ferment carbohydrates, lysine and ornithine decarboxylation, and positive oxidase reactivity (6). *H. haemoglobinophilus* does not ferment lactose and is indole positive (7).

In our patient, the isolation of *H. aphrophi-
lus from eight blood cultures, the chest film findings of septic pulmonary emboli, and erythrocytes in the urinalysis were highly suggestive of the diagnosis of *H. aphrophilus* bacteremia with endocarditis, a subject recently reviewed by Elster et al. (2). The isolation of an unfamiliar *Haemophilus* species in a compromised host should lead the laboratory to suspect the presence of *H. aphrophilus*.

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**LITERATURE CITED**


