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Brucella suis: an Unusual Cause of Suppurative Lymphadenitis in an Outpatient

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A routine aerobic culture of purulent material from a draining sinus tract of a patient with chronic lymphadenitis yielded growth of a fastidious gram-negative coccobacillus later identified as *Brucella suis* biotype 1. The patient responded to administration of antibacterial drugs and surgical drainage.

Brucellosis is a relatively uncommon disease in the United States, with an annual incidence of only 0.07 cases per 100,000. Brucellosis affects primarily men employed in the meat-packing and livestock industries. The infection is acquired through direct contact with infected animals, ingestion of unpasteurized dairy products, or inhalation of organisms released from contaminated tissue or products (2, 4, 8). This case report describes chronic lymphadenitis in a woman with no recent history of animal contact or clinical suspicion of brucellosis.

Case report. In September 1978, a 54-year-old woman who was a hematology technologist reported appreciable swelling accompanied intermittently by erythema, pain, fever, and drainage in the left supraclavicular area when she was seen at another medical institution. The attending physician at that time suspected malignant disease, and the patient underwent exploratory surgery. The cervical mass contained 50 ml of purulent material, which was submitted to the laboratory for Gram stain, aerobic, anaerobic, and mycobacterial cultures. All cultures were negative, and frozen-section analysis of excised tissue revealed nonspecific lymphadenitis. The patient was treated empirically with tetracycline for 2 months. Drainage from the wound persisted post-operatively for 3 months and gradually ceased. Twelve months after the operation, the patient observed swelling around the wound and occasional drainage. She did not have any other symptoms.

In July 1979, the patient was seen in the outpatient clinic of our institution with a 3-cm, nontender supraclavicular nodule and a draining sinus of 21 months' duration. Chest radiography and purified protein derivative skin tests were negative. Blood studies revealed a leukocyte count of 3,800 cells per mm^3 with a relative lymphocytosis (48%), normal hemoglobin, moderately elevated sedimentation rate (44 mm), and increased globulins (5 g/dl). Purulent material was collected from the sinus tract and submitted to the microbiology laboratory for routine aerobic bacterial culture. Gram stains are not performed on aerobic wound cultures unless specifically requested by physicians. A fastidious gram-negative bacillus was recovered after 48 to 72 h of capneic incubation (7.5% CO_2). Colonies were smooth and yellow-brown.

A brucella agglutination test demonstrated a titer of 1:40. The patient had no known exposure to *Brucella* spp. at work. Her contact with animals occurred during childhood, when she lived with her family on a farm where cattle and pigs were maintained. She had lived in Florida, Michigan, Maryland, and Massachusetts.

The patient was treated by surgical debridement and was given tetracycline and streptomycin for 1 month. A test for antibiotic susceptibility was not performed because routine techniques cannot be employed with fastidious organisms.

After 2 years, the patient remains free of signs or symptoms of brucellosis.

Initial growth of an oxidase- (Marion Scientific, Kansas City, Mo.) and catalase-positive, gram-negative coccobacillus (GIBCO Laboratories, Lawrence, Mass.) was observed only on brucella agar with 5% horse blood. Growth was absent on tryptic soy agar with 5% sheep blood, Columbia base agar with colistin, nalidixic acid and 5% sheep blood, eosin methylene blue agar, and thioglycollate broth (GIBCO). The isolate was a slow-growing nonfermenting bacillus, e.g., *Bordetella* or *Moraxella*-like spp., and was inoculated to a conventional battery of differential media consisting of oxidative-fermentative medium and glucose, xylose, maltose, lactose, and control base; lysine and ornithine decarboxylases; arginine dihydrolase and control base; indole-nitrate broth; Sellers differential agar and semisolid motility plate. After 48 h of incuba-

tion, poor growth, if any, was observed in most of the media. The only positive reaction was nitrate reduction. After 72 h of incubation, a review of the initial conventional battery of tests provided an additional positive reaction: xylose oxidation. A urea agar slant was inoculated, and urease production was detected within 10 s of inoculation. After consultation with the Massachusetts Department of Public Health Diagnostic Laboratory, we decided to rule out the identification possibilities of *Haemophilus* or *Brucella* spp. and tested for X and V factor requirements and hydrogen sulfide (H_2S) production, using lead acetate strips. H_2S production was observed throughout 4 days of incubation, and growth was independent of both X and V factors. Cultivation of the isolate was enhanced by, but did not require, increased CO_2.

A simple test battery along with a rapid urease (GIBCO) and marked H_2S production throughout 4 days suggested the identification of *Brucella suis* (1). The Centers for Disease Control in Atlanta confirmed that the isolate was *Brucella suis* biotype 1 by performing serological tests as well as thionin and basic fuchsin inhibition tests. Biotype 1 represents the commonest type of *Brucella suis* in the United States (Special Bacteriology Section, Centers for Disease Control, Atlanta, Ga., personal communication).

Discussion. Chronic localized brucellosis is difficult to diagnose due to its relatively uncommon occurrence and frequently negative cultures and serological tests (7). Clinical microbiology laboratories should employ comprehensive culture procedures to recover a wide range of common and unusual pathogenic organisms. Identification protocols should also include infrequent pathogens, since the use of simple test batteries may quickly suggest the presence of these unusual pathogens. This would ensure safe handling of highly biohazardous organisms within a biological safety cabinet and the reporting of preliminary findings to physicians until confirmation is obtained from a reference laboratory.

Complete identification of *Brucella* spp. is important in helping to define the source of infection, provide guidelines for therapy with single or multiple antibiotics, and determine prognosis (4). In addition, several investigators have reported that therapy with a combination of tetracycline and streptomycin is more effective than tetracycline alone (5, 6), and development of resistance has usually been observed with streptomycin alone (3).

Based on our experience, brucella agar with 5% horse blood readily permits recovery of both rapid-growing and fastidious organisms from surface wounds, normally sterile body sites, tissues, and pus from chronic infections.

LITERATURE CITED

1. **Alton, G. G., L. M. Jones, and D. E. Pietz.** 1975. Laboratory techniques in brucellosis. W.H.O. Monogr. Ser. **55**:1–163.
2. **Centers for Disease Control.** 1979. Brucellosis surveillance. Annual summary, 1978, p. 1–6. Centers for Disease Control, Atlanta, Ga.
3. **Hall, W. H., and W. W. Spink.** 1947. In vitro sensitivity of Brucella to streptomycin; development of resistance during streptomycin treatment. Proc. Soc. Exp. Biol. Med. **64**:403–406.
4. **Hausler, W. J., Jr., and F. P. Koontz.** 1970. B. Brucellosis, p. 364–378. *In* H. L. Bodily, E. L. Updike, and J. O. Mason (ed.), Diagnostic procedures for bacterial, mycotic and parasitic infections: technics for the laboratory diagnosis and control of the communicable diseases, 5th ed. American Public Health Association, New York.
5. **Joint FAO-WHO Expert Committee on Brucellosis.** 1971. Therapy of human brucellosis. W.H.O. Tech. Rep. Ser. **464**:34–36.
6. **Kelly, P. J., W. J. Martin, A. Schirger, and L. A. Weed.** 1960. Brucellosis of the bones and joints. Experience with thirty-six patients. J. Am. Med. Assoc. **174**:347–353.
7. **Kerr, W. R., J. D. Coghlan, D. J. Payne, and L. Robertson.** 1966. The laboratory diagnosis of chronic brucellosis. Lancet **ii**:1181–1183.
8. **Renner, E. D.** 1979. Brucellosis. Clin. Microbiol. Newsl. **1**:1–3.