NOTES

Isolation of *Mycobacterium chelonae* from a Granulomatous Lesion in a Pig

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Received for publication 8 April 1977

A rapidly growing, non-photochromogenic acid-fast organism was isolated from a lesion in a 6-month-old pig. The isolate was subsequently identified as *Mycobacterium chelonae* by its growth rate, by its failure to reduce nitrates, and by being arylsulfatase positive at 3 days.

The clinical significance of *Mycobacterium chelonae* as a potential pathogen has not been clearly defined. However, this ubiquitous acid-fast bacillus has been isolated from patients with endocarditis (1, 10, 14), thyroiditis (7), lymphadenitis (11), osteomyelitis (8), injection abscesses (4), cutaneous lesions involving the cervico-facial region (2), and lung lesions (5, 6, 19). The organism has also been isolated from porcine prosthetic heart valves (10, 20), a monkey (9), a manatee (3), and a fish aquarium (13).

In March 1976, one 6-month-old pig in a lot of 16 animals originating from a farm in central Iowa was found to have two caseous and mineralized lesions about 2 cm in diameter in the neck muscles. Tissues with lesions were collected in a 10% Formalin solution and in a saturated sodium borate solution and transported to the laboratory for histopathological and mycobacteriological examinations.

Formalin-fixed tissues were placed in paraffin and sectioned. Separate sections were stained with hematoxylin and eosin and with a fluorochrome dye for microscopy (12). Histological examination revealed the presence of multiple granulomas encapsulated by thin walls of fibrous connective tissue (Fig. 1). The predominant cells in the granulomas were mononuclear and epithelioid cells with numerous lymphocytes scattered throughout. A few granulomas encapsulated with connective tissue had a central area of necrosis with mineralization and numerous granulocytic cells. Langhans-type giant cells were observed in several granulomas. Acid-fast bacilli were observed in granulomatous lesions.

A portion of the lesion in sodium borate solution was ground in sterile media and treated

with 2% sodium hydroxide as described previously (18). Culture media inoculated with the treated tissue suspension were incubated at 37°C. Growth was observed on the culture media at 4 days postinoculation. Microscopic examination of smears of colonies stained by the Ziehl-Neelsen procedure revealed numerous acid-fast bacilli. Growth was observed on subcultures incubated at 25, 30, and 37°C; no growth was observed at 45°C.

The rapidly growing, acid-fast isolate was identified by colony morphology and by certain biochemical tests (15, 21, 23). The isolate failed to hydrolyze Tween 80, reduce nitrates, or produce niacin; the test for iron uptake was negative. No growth was observed in 5% NaCl, and no colony filaments were present on corn meal agar. The acid-fast isolate was positive for arylsulfatase on tests conducted at 3 days. These characteristics were identical to those obtained for a reference culture of *M. chelonae* (Trudeau Mycobacterial Culture Collection, no. 1524). Drug susceptibility tests were made on Middlebrook's 7H10 medium (22). The microorganism was resistant to certain antimycobacterial drugs, including streptomycin (10 µg/ml), isonicotinic acid hydrazide (10 µg/ml), rifampin (10 µg/ml), *para*-aminosalicylic acid (10 µg/ml), and ethambutol (10 µg/ml). The isolate was susceptible to the following drug combinations: ethambutol (10 µg/ml) plus isonicotinic acid hydrazide (1 µg/ml) and ethambutol (10 µg/ml) plus rifampin (1 µg/ml).

Mycobacterium avium is the acid-fast organism most commonly isolated from granulomatous lesions in swine in the United States (17). Although rapidly growing mycobacteria such as *Mycobacterium fortuitum* have been isolated from tissues of slaughter swine (16), no reports

FIG. 1. Granulomatous lesions in a section of striated muscle with mononuclear, epithelioid, and Langhans-type giant cells stained with hematoxylin and eosin ($\times 200$).

are available on the isolation of *M. chelonae* from swine. These infections appear to be of limited economic importance; however, they may be of public health significance since *M. chelonae* has been isolated from patients with valvular endocarditis and from porcine heart valves (1, 10, 14, 20). The isolation of *M. chelonae* from a young slaughter pig further emphasizes that suitable mycobacteriological studies should be conducted on tissues of swine selected for transplants to ascertain that this species is not present. Serological studies should be made on isolates from animals and humans to obtain information on their antigenic similarity. This information may be of value in epidemiological investigations.

In humans, abscesses due to *M. chelonae* have been reported after vaccination; the procedures used for preparing and administering the vaccine were considered the source of contamination (4). In the case reported herein, the source of *M. chelonae* is unknown; however, the orga-

nism may have been introduced by trauma or in vaccination. Additional studies are needed to determine the susceptibility of mycobacteria to the drugs, chemicals, and processing procedures routinely used to sterilize vaccines for animal use.

Only a limited number of cases of *M. chelonae* infection have been reported in animals and humans (1, 3, 6-11, 14, 19). However, it should be noted that conditions, temperature, media, and decontamination used routinely for isolating other mycobacteria may not be optimal for culturing *M. chelonae*.

We acknowledge C. T. Felix, Meat and Poultry Inspection, U.S. Department of Agriculture (USDA), Fort Dodge, Iowa, for the submission of specimens and the technical assistance of the Mycobacteriology and General Pathology staffs, Veterinary Services Laboratories, Animal and Plant Health Inspection Service, USDA, Ames, Iowa. We would also like to acknowledge Donald DeYoung, Department of Laboratory Medicine, Mayo Clinic, Rochester, Minn., for conducting the drug susceptibility tests.

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