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Abscess Caused by Vancomycin-Resistant *Lactobacillus confusus*

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Several isolates of vancomycin-resistant *Lactobacillus confusus* from human sources have been described, but to our knowledge, no well-documented infection attributable to this organism has been published. A thumb abscess caused by this bacterium in a healthy 49-year-old male is reported here. He was successfully treated by surgical drainage and cephalothin.

Vancomycin is used for treating infections caused by gram-positive cocci (5). Vancomycin resistance is a characteristic of members of the genera *Leuconostoc* and *Pediococcus*, and isolation of members of both genera has been reported with increasing frequency (7, 9–11).

Lactobacillus confusus may often be mistaken for these gram-positive cocci (1, 11). Although isolates from human sources have been described previously (1, 3, 10, 11, 13), no well-documented infections caused by this bacterium have been reported (13). We present herein one such case.

Case report. A healthy 49-year-old male was admitted to the Trauma Department of our Center for an encapsulated abscess of the right thumb. His past history included only a palm-tree splinter to that digit, for which he received no antibiotics. The abscess was subsequently drained, 1 g of cephalothin was administered intravenously 4 times a day for 10 days, and the patient's recovery was uneventful. Purulent material obtained by aspiration was processed within 30 min at our laboratory, and Gram strain revealed short gram-positive rods and coccobacillary forms in pairs and chains and numerous polymorphonuclear leukocytes. After incubation in 5% CO_2 at 35°C for 48 h, a pure culture of a gram-positive bacterium was obtained on trypticase soy agar (Laboratorios Britania S.A., Buenos Aires, Argentina) supplemented with 5% sheep blood and on brain heart infusion broth (Laboratorios Britania S.A.). It was identified as *L. confusus* (Table 1). Antimicrobial susceptibility was determined by dilution in Mueller-Hinton agar (8), with a final inoculum of roughly 10^5 CFU/ml and with incubation at 35°C for 24 h in ambient air (since previous tests had shown adequate growth under these conditions). MICs (in micrograms per milliliter) of 15 antimicrobial agents for the isolated strain were as follows: vancomycin, >256; penicillin, 1; ampicillin, 0.5; cefoxitin, 32; ceftazidime, 16; rifampin, >8; trimethoprim-sulfamethoxazole, >64 (the strain was determined to be resistant to all these agents by breakpoints suggested by Swenson et al. [13]); cephalothin, 8; cefuroxime, 8; cefotaxime, 4; imipenem, ≤0.125; erythromycin, ≤0.125; gentamicin, 1; chloramphenicol, 8; and ciprofloxacin, 1 (the strain was susceptible to all these agents by the criteria described above).

Discussion. Numerous reports on gram-positive organisms that are resistant to vancomycin have been published recently (1, 3–5, 7, 9–11, 13). Although most authors have pointed out the need to presumptively identify these bacteria (1, 4, 10, 11, 13), few clinical laboratories employ a 30-μg vancomycin disk (1) to separate them from alpha-hemolytic streptococci (11–13). *L. confusus*, which may be mistaken for such organisms (1, 12), is commonly found in sugarcane,

TABLE 1. Microbiologic characteristics of *L. confusus*

Test	Result(s)[a]		
	Isolate	Kandler	Green
Hemolysis	Alpha	ND	ND
Gram stain	Coccobacilli, short G+ rods	Coccobacilli, short G+ rods	ND
Arrangement	Chains, pairs	Chains, pairs	ND
Catalase	Negative	Negative	Negative
Bile-esculin	Negative	ND	ND
Growth:			
In 6.5% NaCl broth	Negative	ND	Negative
At 42°C	Positive	ND	ND
Up to a 30-μg vancomycin disk	Positive	ND	Positive
Pyrrolidonylaryamidase activity	Negative	ND	Negative
Esculin hydrolysis	Positive	Positive	Positive
Motility	Positive	ND	ND
Hippurate hydrolysis	Negative	ND	Negative
Deamination of arginine	Positive	Positive	Positive
Dextran production	Positive	Positive	ND
Acetoin production	Positive	ND	Positive
Hydrogen peroxide production	Positive	ND	ND
β-Galactosidase activity	Positive	ND	Positive

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TABLE 1—*Continued*

Test	Result(s)[a]		
	Isolate	Kandler	Green
Acid formation in:			
Lactose	Negative	Negative	Negative
Mannitol	Negative	Negative	Negative
Sorbitol	Negative	Negative	Negative
Glycerol	Negative	Negative	Negative
Arabinose	Negative	Negative	Negative
Rhamnose	Negative	Negative	Negative
Raffinose	Negative	Negative	Negative
Maltose	Positive	Positive	Positive
Xylose	Positive	Positive	Positive
Mannose	Positive	Positive	Positive
5-μg ciprofloxacin disk inhibition zone	18 mm	ND	ND
MIC (μg/ml)			
Imipenem	<0.12	ND	ND
Vancomycin	>256	ND	>128

[a] ND, not determined; G+, gram positive; Isolate, strain isolated in this study; Kandler, *L. confusus* ATCC 10881 (6); Green, Four clinical isolates (3).

in carrot juice, and (less often) in raw milk and sewage (6). Although isolations from human sources have been reported (1, 3, 10, 11), their clinical significance could not be firmly established. Green et al. found a 22% prevalence of vancomycin-resistant gram-positive cocci, including four *L. confusus* strains, in children's stools (3). One of these four strains was also present in blood isolates, but its clinical significance was not described (3). The same authors reported 13 isolates of *L. confusus* from stools of pediatric liver transplant recipients (2).

Recently, Riebel and Washington recovered *L. confusus* from the peritoneal fluid and abdominal wall of two patients. One isolate lacked clinical significance, while the other was described as unclear (10).

The case reported herein demonstrates that *L. confusus* can produce infection by an exogenous route. Reliable detection and identification of gram-positive bacteria that are resistant to vancomycin will shed further light on their clinical significance.

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