JOURNAL OF CLINICAL MICROBIOLOGY, June 2001, p. 2356–2357 Vol. 39, No. 6
0095-1137/01/$04.00+0 DOI: 10.1128/JCM.39.6.2356–2357.2001

CASE REPORTS

Bacteremia by *Dermabacter hominis*, a Rare Pathogen

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Received 27 November 2000/Returned for modification 22 January 2001/Accepted 28 March 2001

***Dermabacter hominis* is a gram-positive, catalase-positive, glucose-fermenting rod, which, as it grows forms small greyish-white colonies with a characteristic pungent odor. Previously known as coryneform Centers for Disease Control and Prevention groups 3 and 5, it was catalogued as *D. hominis* in 1994. Various strains isolated in blood cultures, abscesses, or wounds in the 1970s were retrospectively characterized in referral centers as *D. hominis*. In this report we describe two patients with severe underlying pathology who developed bacteremias by *D. hominis* within the context of their clinical pictures.**

CASE REPORTS

Case 1. A 29-year-old woman was human immunodeficiency virus positive in stage B3 of AIDS. She was admitted to our hospital with left hemiparesia. A cerebral computer tomography scan showed a hypodense lesion in the left parietal lobe compatible with progressive multifocal leukoencephalopathy. A peripheral venous catheter was placed. While in the hospital the patient suffered a marked deterioration of her neurological situation, together with severe worsening of her general state, with alteration of pulmonary function, upper digestive tract hemorrhage, and fever peaks. Various antimicrobial therapies were administered, including clindamycin, ciprofloxacin, and the combination of fluconazole, meropenem, and sulfamethoxazole, in spite of the fact that no pathogenic microorganism was isolated in the various cultures requested, including the catheter culture. The patient's situation worsened and reached terminal stage, which led to the decision to suspend all medication and to maintain only sedation. *Dermabacter hominis* and *Candida albicans* were isolated from two blood cultures taken 48 h earlier. Treatment with fluconazole and vancomycin was initiated, but the patient died 24 h later.

Case 2. A 65-year-old male patient had a personal history of cardiopathy and broncho-obstructive pneumopathy. He was brought to our Emergency Service with thoracic pain, for which he was admitted to the Cardiology Department. While in the hospital he suffered a cardiorespiratory arrest, from which he recovered after cardiopulmonary reanimation although he was left with irreversible neurological sequelae. During the following days he suffered episodes of fever peaks for which antibiotic treatment with cloxacillin plus gentamicin was administered. After 4 days without fever and without antibiotic treatment he presented with a febrile peak of more than 38°C. At this point two blood cultures were taken and the catheter was removed for culture. The patient's condition deteriorated, and he died suddenly 48 h later. That same day *D. hominis* grew in the two blood cultures. The catheter culture was negative.

Microbiology. In both patients small gram-positive coccobacilli with a coryneform appearance were detected in two blood cultures per patient, processed with the VITAL system (bioMerieux, Marcy l'Etoile, France). These grew, after 24 h of incubation in an atmosphere enriched with 5% CO_2, in the subcultures performed on blood agar plates. The colonies were small and greyish-white with an intense and pungent odor. After 48 h the size of the colonies increased to 1 mm in diameter.

The microorganisms were identified as *D. hominis* on account of their phenotypic characteristics, which included the absence of motility and negative reactions for urease, oxidase, and nitrate reduction. Among the positive reactions were catalase production and esculin hydrolysis, and there was a fermentation pattern which included the production of acid from glucose, sucrose, maltose, and lactose. In addition, the bacteria decarboxylated lysine and ornithine.

Using the API Coryne system (bioMerieux) we obtained the numerical profile 4570565, which in the API plus, version 2.0, database corresponds to an "excellent identification" of *D. hominis*.

In addition, the strains presented a composition of the cell wall which was characterized by the absence of mycolic acids and the presence of *m*-diaminopimelic acid as the diaminoacid of the peptidoglycan.

As indicated by the method of diffusion gradient (E-test; Biodisc, Solna, Sweden), the microorganism was potentially susceptible to various β-lactams, glycopeptides, and rifamicins and displayed resistance to aminoglycosides, fluoroquinolones, macrolides, and lincosamides. The MICs obtained for the different antimicrobial agents are as follows: penicillin, 2 mg/liter; cefuroxime, 8 mg/liter; cefotaxime, 4 mg/liter; gentamicin, >256 mg/liter; erythromycin, >256 mg/liter; clindamycin, >256 mg/

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liter; ciprofloxacin, >32 mg/liter; rifampin, 0.03 mg/liter; vancomycin, 0.25 to 0.5 mg/liter.

Discussion. Until recently the isolation of coryneform bacteria in clinical samples, especially in blood cultures, was usually considered synonymous with contamination. In recent years, there has been a progressive increase in the number of reports in the literature of clinical cases associated with the isolation of various coryneforms, and the number of convincingly documented descriptions of infections by this group of agents has enriched our knowledge of this subject, especially in terms of a more precise and reliable microbiological diagnosis of the genera and species involved. This diagnosis would include an initial screening based on the production or lack of production of catalase, motility, and the fermentation or oxidation capacity of the strain. With these basic data as a starting point, the use of commercial galleries (bioMerieux) provides a second stage, which in many cases is sufficient for the identification of the microorganism. Last, the quantitative and qualitative evaluations of the fatty acids of the bacterial wall, chromatographic analysis of mycolic acids, and, as a last resort, molecular-genetics techniques, in most cases, provide a precise identification, although the last techniques are only carried out in referral laboratories (3).

Dermabacter is a relatively new genus, and *D. hominis* is a relatively new species (2, 7). *D. hominis* has been assigned to those coryneforms previously designated Centers for Disease Control and Prevention groups 3 and 5, whose epidemiology, potential pathogenic role, and antimicrobial susceptibilities were unknown until a decade ago (4). This lack of knowledge led to it being left out of the database of the API Code Book, version 1.0, and its profiles (4470765, 4570165, 4570364, 4570365, and 4570765) being ascribed to group A coryneforms (1). Little has been learned since its description concerning the epidemiology of this agent, except that it appears to form part of the human cutaneous flora, and its role in clinical pictures has not yet been defined (6). To date, very few case reports of serious infections caused by this agent have been described (2).

Possibly one of the factors, together with its recent systemic assignation, that has contributed to our ignorance of the role it may play in infectious pathology is its broad profile of antimicrobial susceptibility. The strains tested to date display susceptibility to β-lactams and glycopeptides (5), antibiotics very frequently used in empiric treatment of infections of unknown origin in patients with severe underlying pathologies, in which these microorganisms could play an important role.

The patients described in this report had extremely severe underlying pathologies. The first case involved AIDS in advanced stage with severe neurological effects, in the course of which the patient presented fever peaks treated empirically with a wide range of antibiotics. These antibiotics, without doubt, contributed to the etiological selection of the last septic episode, in which *C. albicans* and *D. hominis* were isolated in two pairs of blood cultures. The second patient, like the first, presented with severe neurological effects. The antibiotic treatment chosen to control empirically a concomitant episode of fever, gentamicin plus an antistaphylococcal penicillin, presumably served to develop the final bacteremia by *D. hominis*, isolates of which displayed resistance to both antibiotics.

In conclusion, *D. hominis* may be placed in the large group of human colonizers which, in patients with severe underlying diseases and reduction of defensive capacity, take advantage of the administration of broad-spectrum antimicrobial therapies to develop their virulence opportunistically in these terminal stages. However, an improved knowledge of the characteristics of these microorganisms would facilitate the description of the role which they play in the infectious pathologies of our times.

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