Bacteremia Due to Three Bacillus Species in a Case of Munchausen’s Syndrome

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We report on a case of recurrent bacteremia due to three Bacillus spp. in an immunocompetent patient with no history of intravenous drug use. The source of the organisms was postulated to be a self-injected compound containing Bacillus spores, given the patient’s past history of psychiatric illness and self-destructive behavior.

CASE REPORT

An 18-year-old female presented to our emergency department with a 6-h history of an acute onset of a retro-orbital headache, a nonproductive cough, and poorly localized abdominal pain. Three weeks earlier the patient had been briefly hospitalized at the same institution for an episode of enteroviral meningitis.

On examination, she was afebrile, had no signs of meningism, and had no focal neurology. Cardiorespiratory and abdominal examinations were normal. She was admitted to a hospital ward for further evaluation and observation.

Twelve hours later she became febrile (39°C), tachycardic (180 beats/min), and hypotensive (systolic blood pressure, 85 mm/Hg). Her white blood cell count and C-reactive protein (CRP) level rapidly became elevated, and the results of liver function tests became abnormal. A chest X-ray was normal, and a computed tomography scan of her abdomen and pelvis revealed a small amount of free fluid in the pelvis, with a normal pancreas and liver. Because an abdominal focus was suspected, the patient was treated empirically with ampicillin, gentamicin, and metronidazole. Six sets of cultures of blood collected at this stage grew three Bacillus species that were identified as Bacillus licheniformis, Bacillus pumilus, and Paenibacillus polymyxae (formerly Bacillus polymyxa). Once these blood culture results were known, the antibiotic regimen was changed to vancomycin, ciprofloxacin, and metronidazole.

After the commencement of intravenous antibiotic treatment, the patient rapidly became afebrile, followed by normalization of her inflammatory markers over the ensuing 72 h. However, she continued to complain of epigastric pain and exhibited mild epigastric tenderness but had no clinical evidence of peritonitis. A gastroscopy performed at this stage revealed no abnormality. Three further sets of cultures of blood collected after 9 days of treatment were negative. After 15 days of treatment, vancomycin was withdrawn, and ciprofloxacin and metronidazole were continued. On the day that vancomycin treatment was ceased, the patient again became febrile, with hypotension, tachycardia, and an elevation in CRP levels and the white blood cell count. Blood cultures performed at this time once again grew B. pumilus. Vancomycin was reintroduced.

Following her second febrile episode, the patient was queried about potential self-induced medical illness (Munchausen’s syndrome). She angrily denied any past psychiatric history and repeatedly threatened discharge against medical advice. At this stage, her parents reported finding some bloodstained bandages and syringes in her room at home. No illegal recreational drug substances were found. However, for ethical reasons a search of her hospital room was not performed without her consent.

An extensive previous psychiatric history, which was subsequently obtained from her psychiatrist, included previous self-destructive behavior, with at least one episode of self-injection of soil. She also had a history of a 6-month inpatient stay in a psychiatric institution at the age of 16 for an eating disorder. There was, however, no documented history of illicit drug use.

On becoming afebrile, vancomycin was withdrawn and she was continued on oral ciprofloxacin and metronidazole. Remaining well, she was discharged to the care of her psychiatric team, who were also of the opinion that her presentation was consistent with a diagnosis of Munchausen’s syndrome and the product of severe psychopathology.

Blood cultures were processed in BACTEC PLUS Aerobic/F and Anaerobic/F systems (Becton Dickinson Diagnostic Instrument Systems, Sparks, Md.). Three Bacillus species (Table 1) were isolated from all six sets of cultures of blood collected on admission. Three further sets of cultures of blood collected on day 9 were negative, while the patient was still receiving antibiotics. B. pumilus was reisolated from one set after vancomycin was withdrawn on day 15. The three Bacillus spp. were identified on the basis of the results of the tests given in Table 1.

Sensitivity testing was done on the isolates by the disk diffusion method. The NCCLS interpretive standards established for staphylococci were used since no interpretive standards have been established for Bacillus spp. (4, 5). All three species were sensitive to cefazolin, vancomycin, chloramphenicol, to-
bramycin, gentamicin, ciprofloxacin, and clindamycin. *B. pumilus* was sensitive to penicillin, while *B. licheniformis* and *P. polymyxa* were resistant.

*Bacillus* spp. are aerobic gram-positive, spore-bearing rods usually found in decaying organic matter, dust, soil, and water; and some are part of the human gut and skin flora (8).

Since *Bacillus* spp. are common laboratory contaminants, isolation of the organisms in cultures of blood does not indicate infection unless they are detected in multiple sets. Our patient was considered to have true bacteremia, as the *Bacillus* spp. grew from multiple sets of blood culture bottles.

Several reports of bacteremia due to *Bacillus* spp., mostly in immunocompromised patients, have been published in the literature (2, 6).

In immunocompetent individuals, *B. licheniformis* bacteremia has been reported in association with central venous catheters (1) and in a patient with prosthetic valve endocarditis (7). A case of *B. licheniformis* bacteremia following self-inoculation of an organic drain cleaner (a product that includes spores of *B. licheniformis*, *B. pumilus*, and other *Bacillus* spp.) has also been reported (3). *B. pumilus* bacteremia has been reported only in immunocompromised patients (2).

It is likely that our patient injected herself twice with a substance containing the organisms. The source of the organisms, although not found, is likely to be a compound containing *Bacillus* spores. Septic tank products contain spores of *B. licheniformis*, *P. polymyxa*, *B. subtilis*, and other *Bacillus* spp. Even though two episodes of significant bacteremia due to three *Bacillus* spp. in an otherwise immunocompetent host in the absence of a history of intravenous drug use did suggest the possibility of Munchausen’s syndrome, impediments to obtaining her past psychiatric history delayed the diagnosis. Had the diagnosis been reached earlier, a second episode of septicemia may have been avoided.

The repeated isolation of an uncommon pathogen in blood suggests an unusual source and warrants a detailed history.

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**REFERENCES**


