ANAEROBIC SEPTICEMIA SECONDARY TO FUSOBACTERIUM MORTIFERUM

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A case of anaerobic sepsis associated with Fusobacterium mortiferum is reported. Blood cultures from a 60-year-old man with type II diabetes mellitus, hypertension, severe atherosclerotic cardiovascular disease, and renal insufficiency revealed on a gram-stained smear highly pleomorphic gram-negative bacilli with bizarre forms and round bodies. Growth of the organism on nonselective anaerobic media and analysis of its pattern produced results characteristic of Fusobacterium mortiferum.

Gram-negative, anaerobic bacilli of the genus Fusobacterium are normal inhabitants of the oral cavity, female genital tract, and alimentary tract.[1] Fusobacterium nucleatum and Fusobacterium necrophorum are the most frequent species isolated from clinical specimens.[2] The incidence and epidemiologic factors of septicemia due to Fusobacterium mortiferum are difficult to determine from the available literature because this is an anaerobic bacillus rarely isolated from clinical specimens.

CASE REPORT

A 60-year-old man was hospitalized with complaints of dizziness, headaches, and nausea. On admission, he admitted to weight loss, polyuria, and weakness. Two years before, the patient's diagnoses were type II diabetes mellitus, hypertension, severe atherosclerotic cardiovascular disease, and renal insufficiency. He had a history of cigarette smoking and alcohol abuse.

On admission, laboratory findings included a leukocyte count of 16,900 cells/mm^3 with 72 percent neutrophils, 24 percent lymphocytes, and 4 percent monocytes, and hemoglobin of 10.8 grams/dL. The glucose level was 140 mg/dL. Urinalysis revealed a moderately turbid urine with a specific gravity of 1.025, pH 6.0, and protein 300 mg/dL; it was negative for blood, glucose, and acetone.

Immediately following admission, the patient had an oral surgery consultation. He was found to have severe periodontitis with gingival abscesses. His condition worsened, and despite all efforts, he deteriorated to a comatose state, secondary to acute cerebral infarct, and died. The final diagnoses were dental sepsis, anaerobic septicemia, and respiratory failure.

Bacteriology

During his two months of hospitalization, weekly blood cultures were drawn using the Septi-Chek Blood Culture Bottle (Roche Diagnostics, Nutley, NJ). After the fourth week, Staphylococcus species, coagulase negative, were isolated in one out of two sets; this was ruled as contamination and not a cause of infection. During the seventh week of hospitalization, two sets of blood

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cultures revealed gram-negative bacilli. Aerobic cultures revealed no growth on 5 percent sheep blood agar and MacConkey's media in 24 hours. The thioglycollate broth showed turbidity, and a repeat gram stain revealed pleomorphic gram-negative bacilli. The thioglycollate broth was subcultured to blood and kanamycin-vancomycin anaerobic media and incubated in an anaerobic jar using BBL Gas Pak-Anaerobic Systems (Cockeysville, MD) at 37°C for 24 hours. After 24 hours, the anaerobic media showed convex colonies with slightly opaque centers and translucent spreading edges but no hemolysis. These bacilli were filamentous, containing swollen areas with large round bodies and irregular staining[3] and differing from the more commonly isolated Fusobacterium nucleatum with its distinctive gram-negative rods with tapered ends.[4]

Identification studies were performed using the API AN-IDENT (Analytab Products, Plainview, NJ) biochemical test strip according to the manufacturer's recommendations. The test strip was inoculated from a 24-hour culture on a nonselective medium and incubated for 4 hours at 35°C, resulting in a profile number (0071200) that is characteristic of Fusobacterium mortiferum.

The antimicrobial susceptibility studies of the blood culture isolate were performed by the broth-disk diffusion method[5] for testing anaerobes. The organism was susceptible to carbenicillin and tetracycline and resistant to penicillin, chloramphenicol, erythromycin, and clindamycin.

DISCUSSION

Most anaerobic infections are primarily endogenous in origin and arise in proximity to mucosal surfaces where anaerobes predominate as normal flora. The oral cavity is populated by large numbers of anaerobes.[6] Periodontal disease is associated with infections in which the predominant pathogen is anaerobic. Anaerobic infections involving soft tissue usually evolve from traumatic injury, surgery, or ischemia associated with vascular disease or diabetes mellitus,[3] findings present in this patient.

In a study done by Henry et al,[7] the source of bacteremia due to Fusobacterium was found in the upper respiratory tract, oropharyngeal area, sinuses, mouth, or pelvis. Although bacteremia due to anaerobic gram-negative bacilli usually arises from the gastrointestinal tract,[8] fusobacterial bacteremia still commonly results from infection in the upper respiratory tract.[9]

CONCLUSION

This case is significant because the organism was isolated from a patient who had severe periodontitis with no other apparent infections. Fusobacterium mortiferum is rarely, if ever, isolated from soft tissue infections above the waist. In addition, the incidence of septicemia caused by Fusobacterium mortiferum is only 2 percent.[10] Based on the findings in this report, clinicians should be aware that anaerobic gram-negative sepsis may result from rarely isolated anaerobic organisms that inhabit the oral cavity.

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