

Sepsis by *Capnocytophaga*

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Summary

Capnocytophaga species is a commensal gram-negative rod capnophilic facultative anaerobic bacterium that colonizes the oral cavity of humans and animals. This bacterium can cause severe illness in patients with alcohol addiction, chronic lung diseases, liver diseases and immunosuppression. Herein, we report a rare case of sepsis caused by *C. sputigena* in a 83-year-old woman.

Introduction

Capnocytophaga species is a commensal gram-negative rod capnophilic facultative anaerobic bacterium that colonizes the oral cavity of humans (*C. sputigena* and *C. gengivalis*) and animals such as dogs and cats (*C. canimorsus*). This bacterium can cause severe illness in patients with alcohol addiction, chronic lung diseases, liver diseases and immunosuppression. *Capnocytophaga* spp. have been recovered from subgingival plaque, dental pockets, tracheal secretions, bronchoscopy specimens, aspirates of wounds, abscesses and blood. The human species are implicated in periodontal disease and in systemic infections while *C. canimorsus* is responsible for infectious complications of animal bites (3).

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Capnocytophaga spp. are usually susceptible to extended-spectrum cephalosporins, carbapenems, fluoroquinolones, chloramphenicol, clindamycin, erythromycin and are resistant to aztreonam, aminoglycosides, trimethoprim and metronidazole (3).

In this clinical case, we report a rare case of sepsis caused by *C. sputigena* in a 83-year-old woman.

Case Report

A 83-year-old woman was admitted to our Emergency Department. The patient had fever (38.2°C) but with normal blood pressure and peripheral saturation of O₂. Chest X-ray was negative for bronchopneumonia and there weren't signs of infection of urinary and biliary tract.

She had severe oropharyngeal mucositis and different comorbidities (chronic atrial fibrillation, rheumatoid arthritis, chronic obstructive arterial disease and recent percutaneous transluminal angioplasty). The therapy taken by the patient was: methotrexate, prednisone, telmisartan, pentoxifylline, allopurinol, calcium levo-folate, cholecalciferol, triazolam, furosemide, pantoprazole, clopidogrel, tapentadol, erythropoietin, calcine heparine.

Laboratory tests showed severe pancytopenia, acute renal failure with electrolytic disorders, high elevation of C-Reactive Protein (PCR) and procalcitonine (leukocytes 70×10⁹/L with 0% of neutrophils, platelets 13×10⁹/L, hemoglobin 7.8 g/dL, creatinine 2.46 mg/dL, Na⁺ 127 mEq/L, K⁺ 4.56 mEq/L, Ca⁺⁺ 8.14 mg/dL, PCR 34.31 mg/dL and procalcitonin 7.27 ng/mL). Sequential Organ Failure Assessment score (SOFA) was 7.

The patient was hospitalized with the suspect of sepsis in severe neutropenia.

Therefore two sets of blood cultures were performed and the patient began immediately empirical support antibiotic therapy with imipenem, vancomycin and fluconazole. The patient was given transfusion support (erythrocytes and platelets) and granulocyte growth factors (Filgrastim 0.5 mL/die). Despite early treatment, there was a progressive clinical deterioration with exitus in the third day of hospitalization. Subsequently, in the blood cultures we isolated *C. sputigena* sensible to imipenem.

Two sets of blood cultures were collected from the patient at the admission and sent to the laboratory. Blood was cultured in 2 BACTEC Plus/F Aerobic and 2 BACTEC Plus/F anaerobes; the samples were incubated in BD BACTEC 9120System. The positive bottles were seeded on Blood and MacConkey agar and incubated in 10% CO₂ at 37°C overnight. The positive samples were subjected to Gram-staining. Other biochemical tests used for identification were catalase test and oxidase test.

The final identification of the bacterium was obtained by means of mass spectrometry MALDI-TOF (Bruker Daltonics) and

antibiotic susceptibility testing was obtained with BD Phoenix Automated Microbiology System.

Results

Blood cultures resulted positive after 2 days of incubation in BD BACTEC 9120System. Tiny non-hemolytic colonies of Gram-negative bacilli appeared on 10% sheep blood agar after 2 days of incubation in 10% CO₂ at 37°C. The colonies were convex or flat with irregular edges, with spreading growth and pitting of the agar observed. On MacConkey agar there was no growth.

The microscopical examination of the Gram slide showed the presence of Gram-negative rods morphologically similar to fusobacteria (4, 5). The catalase and oxidase test were negative. The biochemical reactions allowed to differentiate between *C. sputigena* (negative catalase; negative oxidase) and *C. canimorsus* (positive catalase; positive catalase) (4). Finally, the species *C. sputigena* was identified by means of mass spectrometry MALDI-TOF (Bruker Daltonics).

Discussion and Conclusions

We have selected the presentation of this clinical case because there are few cases of sepsis caused by this bacterium. We have hypothesized that the septicemia is hypothetically started from the

mouth of the patient. In fact, the patient had severe oropharyngeal mucositis and *C. sputigena* is commonly found in the human oral cavity as part of the normal gingival flora (6). Furthermore, this case is an example of how in frail and aged subjects there is a greater predisposition for infection caused by saprophytic germs. The risk for infection is further increased by host factors, invasive procedures and excessive polypharmacological therapy that may be causes of severe complications, sometimes fatal (1,2).

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