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**Bacteremia Caused by *Stomatococcus mucilaginosus*: Report of Seven Cases and Review of the Literature**

**Summary:** During a three-year period eight patients with blood cultures positive for *Stomatococcus mucilaginosus* were identified at two university hospitals. One patient without any signs of infection had a central venous catheter that was colonized with this organism, two patients had transient bacteremia without definite relationship to underlying disease, whereas the remaining five patients suffered from clinically significant infections. Of these last five patients, one had undergone prior head and neck surgery and four had hematologic malignancy with mild to severe neutropenia; two of the latter patients developed the infection subsequent to dental surgery. Besides neutropenia and mucosal damage in the oropharynx, quinolone antibacterial prophylaxis may have been an additional risk factor for the development of *S. mucilaginosus* bacteremia in these patients. A thorough review of the literature revealed that in addition to our findings, endocarditis and foreign body infections are further typical clinical manifestations. Although the overall antibiotic susceptibility pattern of *S. mucilaginosus* resembles that of streptococci, it is suggested that penicillin G may not be the drug of choice for initial therapy of particularly severe infections. *S. mucilaginosus* can be easily differentiated from other gram-positive bacteria when certain key criteria (e.g. adherence to agar surfaces, poor growth on Mueller-Hinton agar, presence of a capsule) as well as an array of biochemical tests, including commercially available identification systems, are applied. Our own and published data emphasize that both microbiologists and clinicians should be increasingly aware of this opportunistic pathogen.

**Introduction**

*Stomatococcus mucilaginosus* [1] is considered part of the normal flora of the mouth and upper respiratory tract of humans [2,3]. Thus far this gram-positive coccus has been rarely encountered in the clinical microbiology laboratory, but in recent years several case reports of human infections have appeared in the literature [4–23]. The spectrum of disease has ranged from peritonitis and catheter-associated bloodstream infections to cases of fatal endocarditis and septicemia, indicating that this bacterium is able to cause aggressive disease in patients with certain underlying conditions. In the present communication we describe seven patients with *S.
mucilaginosus bacteremia seen at two university hospitals during a three-year period (1989–1991). Another case of asymptomatic colonization of a central venous catheter (patient no. 4 of this communication) is included in the analysis. Besides the very recently published experience from a U.S. hospital [23], our cases represent the second during a three-year period (1989-1991). Another case of infections. Since these data indicate an increasing incidence of infections due to this opportunistic agent and since S. mucilaginosus is not well known among both microbiologists and clinicians, we wish to thoroughly review some aspects of the microbiology of this bacterium as well as the clinical features of all Stomatococcus infections reported to date.

Case Reports

Patient no. 1: A previously healthy 18-year-old woman presented with fever (39°C) of four days’ duration accompanied by headache, general fatigue, myalgia and abdominal pain. The physical examination failed to reveal any focus of infection. A chest and abdominal radiograph was unremarkable and there was no evidence of endocarditis. The leucocyte count was 11,000/mm³ and the erythrocyte sedimentation rate was 27 in the first hour. The results of other routine laboratory tests were all within normal limits. The aerobic bottle of a blood culture set yielded S. mucilaginosus (strain Aachen 19) after four days of incubation. Soon after admission the patient became afebrile and asymptomatic without special therapy. The clinical course was interpreted as an infection of unknown origin and the positive blood culture probably represented a transient bacteremia.

Patient no. 2: An 83-year-old woman was admitted to receive a second course of chemotherapy for treatment of immunoblastic lymphoma. One week after initiation of chemotherapy she experienced a first episode of fever of unknown origin. Several blood cultures remained sterile. Fever resolved promptly during one week of therapy with cefotiam plus tobramycin. Four days later the patient developed mild enteritis and fever (38.6°C), and after one day of incubation four of four blood cultures (two aerobic and two anaerobic bottles) were positive for Streptococcus sanguis and S. mucilaginosus (strain Aachen 234). The leucocyte count at that time was 1,500/mm³. Antibiotic therapy with ampicillin and tobramycin was started. The temperature decreased slowly while the leucocyte count rose to normal levels. Several control blood cultures were sterile and the clinical recovery was uneventful.

Patient no. 3: A 64-year-old man underwent hemic maxillectomy because of carcinoma of the palate. Immediately after surgery he had high fever of up to 39.8°C, but two blood cultures were sterile. A regimen of cefotiam plus gentamicin initiated perioperatively was continued and the patient became afebrile. The following day fever relapsed and the aerobic bottle of a blood culture set yielded S. mucilaginosus (strain Aachen 479) after five days of incubation. Clinically, there was no documented site of infection, including the surgical wound. Antibiotic therapy was changed to ciprofloxacin plus amoxicillin-clavulanate and fever resolved within a few days. Three days after surgery the patient was extubated and could be discharged from the intensive care unit without further complications.

Patient no. 4: A 2-year-old girl with acute lymphoblastic leukemia had completed a course of cytotoxic chemotherapy two weeks before readmission for radiation therapy. As a routine procedure in order to detect colonization of the Hickman catheter, a single blood sample for aerobic culture was drawn from the catheter and S. mucilaginosus (strain Aachen 480) was isolated after one day of incubation. During the subsequent hospital stay the child was afebrile and no signs or symptoms of infection were seen. The complete blood count was normal and there was no need for antibiotic therapy. Follow-up blood cultures were not performed.

Patient no. 5: A 13-year-old boy with known paroxysmal tachycardia was admitted with a three-day history of high fever, tachycardia and vertigo. Physical examination was remarkable for a temperature of 39.6°C and mild pharyngitis. A throat culture yielded physiologic flora. Laboratory studies showed leucocytosis of 12,300 cells/mm³, and C-reactive protein was elevated to 36 mg/dl. An electrocardiogram and chest radiograph were normal, and there was no evidence of endocarditis. On admission one blood sample for aerobic culture was drawn and S. mucilaginosus (strain Aachen 483) grew after one day of incubation. The patient rapidly became afebrile without initiation of antibiotic therapy. Four days after admission the C-reactive protein and leucocyte count were normalized and the child was discharged. The clinical picture was interpreted as a febrile infection of the upper respiratory tract accompanied by transient bacteremia.

Patient no. 6: A 27-year-old male was admitted to receive chemotherapy for chronic granulocytic leukemia in accelerated phase. He had excessive periodontitis and several gingival and mucosal ulcers. One week after admission dental surgery was performed with extraction of two teeth. Postoperative complications included fever. A blood culture was positive for Fusobacterium nucleatum. Fever resolved promptly after appropriate treatment. Three weeks later the wound and ulcers in the oral cavity were almost completely healed, and cytotoxic chemotherapy was initiated. The patient was then given ofloxacin orally for antibacterial prophylaxis. Two weeks after completion of chemotherapy he developed fever (39.3°C). A set of blood specimens was drawn (two from peripheral veins, one from a Hickman catheter), and all three blood cultures (three of three aerobic and one of three anaerobic bottles) grew S. mucilaginosus (strain Ulm 19295) after two days of incubation. Empiric therapy with piperacillin plus netilmicin was initiated. The granulocyte count at that time was < 100 cells/mm³. Fever persisted for the following eight days, with daily spikes of > 40°C.