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SEPSIS PER *GRANULICATELLA SPECIES* – A CASE REPORT

Abstract

Introduction: *Granulicatella species*, the genus *Abiotrophia*, were originally known as nutritionally variant streptococci. They are a normal component of the oral flora, but can be the cause of invasive infections, like sepsis, bacterial endocarditis, more often in immunodeficiency persons.

The aim of the study was to present a case of severe clinical form of sepsis and pulmonary abscess in a patient with *Granulicatella species* in the serum.

Case Outline: A 59-year-old man, was treated on Department for Infectious and Tropical Diseases, General Hospital Uzice, in December 2016. He felt weakness, fatigue, had jaundice and fever.

Patient's history included diabetes mellitus and excessive consumption of alcohol. On admission, he was febrile, icteric, dehydrated, with auscultation pathology on the right lung. In laboratory findings was leukocytosis, elevated C reactive protein, thrombocytopenia, hyperbilirubinemia, elevated nitrogen levels, hypoproteinemia and elevated serum transaminases. Lung X-ray and computed tomography indicated pulmonary abscess. Abdominal ultrasound showed hepatosplenomegaly and small ascites *Granulicatella species* was isolated in hemoculture. Patient was treated with a combination of broad-spectrum antibiotics. Despite this, the onset of the disease resulted in septic shock and a lethal outcome.

Conclusion: *Granulicatella species* is normally on the mucous surfaces of the gastrointestinal and urogenital tract. In addition, it can cause severe invasive infections. Treating such infections is difficult. In people with comorbidities, a fatal outcome is possible.

Key words: *Granulicatella species*, sepsis, pulmonary abscess, comorbidities

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Introduction

Granulicatella species is a bacterium of the genus *Abiothrophia*, the nutritional variant of *Streptococcus species* (NVS). He is a normal resident of the oral, genital and intestinal tract (1). This bacteria is not often isolated in patient material, but it can cause various infections. *Granulicatella* was isolated in 5-6% of sera of patients with streptococcal endocarditis (2, 3). It has also been found in the contents of the sinus, eye, bone marrow, abscesses, urethra (4–7). *Granulicatella* is most commonly described as the cause of endodontic infections and dental abscesses (8, 9). This bacteria has caused osteomyelitis, pancreatitis, central nervous system infections, joints, skin and genitourinary tract, in rare cases. *Granulicatella species* was isolated in other patient material, such as pus, synovial fluid, or tissue samples (7, 10–13).

The aim of this study was to present a severe clinical case of a patient with sepsis and pulmonary abscess with *Granulicatella species* in the blood.

Case report

A 59-year-old man was admitted to the Department of Infectious and Tropical Diseases, General Hospital Uzice due to nausea, fatigue, high body temperature (39 ° C) and jaudance. He had surgery for a perforated duodenal ulcer five years ago. He has been regularly taking antihypertensive medications and receiving insulin for seven years. He did not smoke cigarettes, but he over-consumed alcohol.

On admission, he was conscious, oriented, febrile (38.5 ° C), icteric sclera and skin, dehydrated and cardiac compensated. There were no signs of manifest bleeding. The breathing sound was dull with late-inspiratory cracks. The auscultation heart rate was within physiological limits, pulse 73/min, blood pressure 120/80 mmHg. The abdomen was a normal clinical finding, the liver and spleen were not enlarged. Our patient's laboratory findings are shown in Table 1.

Table 1. Laboratory parameters of patients with sepsis-induced Granulicatella species

Laboratory analysis (normal)	Value at hospital admission
WBC (3.4 – 9.7x10^9/L)	18.6
RBC (3.8 – 5.7x10^{12}/L)	2.9
Hb (11.9 – 17.8 g/dL)	10.7
PLT (150 – 450x10^9/L)	88
Glycemia (4.1 – 5.9 mmol/L)	15.2

Urea (3.2 – 8.2 mmol/L)	25.3
Creatinine (44.2 – 97.2 umol/L)	202.9
Albumins (35 – 52 g/L)	30
Bilirubin total (5.1 – 17.0 mmol/L) conjugated (1.0 – 5.0 µmol/L)	141 96
AST (< 34 U/L)	124
ALT (10 – 49 U/L)	95
GGT (< 40 U/L)	224
C reactive protein (< 10 mg/L)	313

An X-ray of the lung indicated an elevated left hemidiaphragm with an abscess in the lower lobe of the left lung. Computed tomography (CT) of the chest describes an abscess 38x44mm diameter and enlarged mediastinal lymph glands. Abdominal ultrasound showed hepatosplenomegaly and a small ascites. *Granulicatella species* was isolated in hemoculture. The recommended standard methods have been used for bacterial isolation (14).

Antibiotic and symptomatic therapy was started immediately. He was initially treated with ceftriaxone, followed by meropenem and vancomycin. The patient received albumin, diuretics, insulin and hepatoprotective therapy. The daily glycemic profile and diuresis were monitored regularly. A thoracic surgeon was consulted who did not indicate surgical treatment of pulmonary abscess. Despite all that was applied, unfortunately, there was a development of septic shock. The disease ended with the lethal outcome of the sixth day of illness.

Discussion

Infections caused by *Granulicatella species* can range from light to extremely heavy. Death in 9% of patients has been reported (7). The most common serious clinical forms are endocarditis (15). Our patient with a lung abscess caused by Granulicatellae species is a rare example of infection with this bacterium and without similar examples available in the literature.

Lung abscess is a necrosis of the lung tissue and the formation of cavities containing necrotic systems, most often caused by infection. The source of the bacteria in our patient could not be proven. He had not previously been exposed to invasive diagnostic procedures, prosthesis or implants. The only invasive daily therapeutic measure was subcutaneous insulin delivery. Clinical examination did not identify any visible skin or soft tissue infection that would be the source of the infection.

However, pulmonary abscess can also occur after aspiration of oral secretions in patients with gingivitis or poor oral hygiene. This usually happens in patients who are unconscious. This can be caused by drug overdose, administration of anesthetics, sedatives, or opiate use. A possible cause of aspiration of the oropharyngeal secretion containing *Granulicatella* may be an alcoholic condition. Hetero-anamnestic data from our patient's closest relatives indicated daily excessive alcohol consumption. As a result, the patient was occasionally disoriented and somnolent. In this condition, in our opinion, aspiration of the oropharyngeal secretion and consequent abscessus in the lungs could have occurred. In this pathogenesis, an abscess would be a source of bacteria and sepsis.

Puncturing the abscess and taking the contents for microbiological analysis would be of great diagnostic importance, but, in the surgeon's view, it was not possible due to the lack of technical conditions for targeted biopsy.

Antibiotic therapy was started immediately and an antibiogram indicating that the bacterium was sensitive to antibiotic administration. Despite everything, our patient experienced disease progression and septic shock. The disease was fatal. There were also lethal outcomes in the case of other *Granulicatella* infections (16). The exacerbation of the disease was certainly compounded by previously associated diseases - alcohol liver disease and diabetes mellitus. The patient also had acute renal failure at admission, but renal function was normalized on the third day of treatment. At the last control, one month earlier, mild thrombocytopenia was present in the laboratory findings of our patient, without anemia and hypoproteinemia, with easily elevated transaminases. Admission findings may be due to sepsis. However, intense alcohol consumption in the days before admission certainly contributed to both, the clinical condition and the laboratory findings.

The small ascites could be a complication of alcoholic liver disease. The case of spontaneous bacterial peritonitis caused by *Granulicatella* has been reported in the literature (17). It would be interesting to examine our patient's ascites for the presence of this bacteria. This diagnostic method was not planned since it was a small amount of free fluid in the abdomen that did not cause any problems.

Conclusion

NVS infections, present diagnostic and therapeutic challenges, even in the age of modern medicine. There are not enough large clinical studies, so our knowledge is based on the small number of cases described. Although *Granulicatella species* is a resident of the normal flora of the human body, it is necessary to pay attention to the pathogenic potential of this bacteria. In people with comorbidities, it can cause infections with severe clinical imaging and lethal outcome.

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