Case report

A rare case of bacterial infective endocarditis caused by Streptococcus alactolyticus

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Abstract

Background: Streptococcus alactolyticus is a rarely isolated bacterium, which classified under DNA cluster IV of the S. Bovis/S. equinus complex. Infections, especially infective endocarditis, caused by Streptococcus alactolyticus are very rare in humans.

Case Report: We describe a case of Streptococcus alactolyticus infective endocarditis complicated by bacteriemia. A 64-year-old male with a previous history of coronary artery bypass grafting surgery applied to our cardiology outpatient clinic with complaints of dyspnea, fever, confusion and an apical holosystolic murmur. He was admitted to the intensive care unit. Transthoracic and transesophageal echocardiography showed the presence vegetation on the aortic valve. S. alactolyticus was detected on serial blood cultures. The patient was first treated with intensive antimicrobial therapy, and then, mitral and aortic valve replacements with uneventful follow-up.

Conclusion: Streptococcus alactolyticus infective endocarditis has only been reported previously in one patient. More information is certainly needed for diagnosis and treatment of patients infected with Streptococcus alactolyticus.

Key words: Streptococcus alactolyticus, endocarditis

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Introduction

Streptococcus alactolyticus is a particular subspecies grouped under streptococcal bovis/Streptococcal equinus complex (SBSEC) (1, 2). This complex contains non-beta hemolytic streptococcus and Lancefield group D streptococci. They are commensal colonizers of human and animal gastrointestinal tract and act as opportunistic pathogens (3).

S. alactolyticus has been isolated from intestinal flora of pigs, chicken, cows, pigeons and dogs (4, 5). Human infections caused by Streptococcus alactolyticus are extremely rare. Herein, we describe a rare case of bacterial infective endocarditis (IE) caused by S. alactolyticus.

Case report

A 64-year-old male was transferred to our emergency service by his family with difficulty of breathing, high heart rate, fever and confusion. He had previous history of coronary artery bypass grafting surgery one month ago. On admission, his vital signs were as follows: high respiratory rate (32 breaths/min), temperature 38.6 C°, blood pressure 150/90 mmHg, heart rate 132 beats/min, and SpO_2 67 %. He was urgently transferred to the intensive care unit (ICU). He had diminished respiratory sounds with crepitating rales bilaterally. We detected a grade 3/6 an apical holosystolic murmur on his left precordium. Glasgow coma score was 9, Acute Physiology and Chronic Health Evaluation score (APACHE II) was 18 and his Multiple Organ Dysfunction Score (MODS) was 6. Arterial blood gas analysis showed metabolic acidosis due to hypoxemia: (bicarbonate 17.2 mmol/L, pH 7.14, $PaCO_2$ 35 mm Hg, and PaO_2 47 mm Hg while on nasal oxygen at 6 L/min).

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Blood cultures were taken. He was intubated and mechanically ventilated. Laboratory analyses showed high leukocyte count (23.400/L) with neutrophil dominance (83 %), erythrocyte sedimentation rate 62 mm/h, C-reactive protein 135 mg/L, procalcitonin 2.4 ng/L, and creatinine 1.4 mg/dL. Immediate bedside transthoracic echocardiography revealed a suspicious mass on the aortic valve with severe aortic regurgitation. There was also moderate degree mitral regurgitation. Same day urgent transesophageal echocardiogram (TEE) confirmed presence of a large mobile vegetation (23x15 mm) on aortic valve and concomitant severe aortic regurgitation (Fig. 1 and 2). Empiric antimicrobial therapy with vancomycin, gentamicin, and penicillin G was initiated. His general condition showed a noticeable improvement within 48 hours. The group D streptococci were identified from blood cultures as S. alactolyticus by Vitek 2 (bioMerieux Vitek, Inc, Hazelwood, St. Louis, MO, USA). It was susceptible to penicillin. The second blood cultures were also positive for S. alactolyticus. Vancomycin was discontinued and intravenous penicilin G (3. 000.000 U every 4 hr) and gentamicin (63 mg every 8 hr) were continued. With that therapy, he showed persistent clinical improvement. His subsequent blood cultures were negative. The patient was extubated on the 10th day of his intubation. The neurologist's consultation including brain magnetic resonance imaging (MRI) was unremarkable for the presence of cerebral embolism. We recommended to the patient early valve surgery due to a large vegetation. He agreed with the proposal and underwent a valvular heart surgery with bioprosthetic aortic and mitral valve replacements. Based on the S. alactolyticus sensitivities, antimicrobial therapy was deescalated to ceftriaxone, which was planned to continue for another six-weeks. The patient recovered completely and was discharged on the 44th day of hospitalization. He had a normal follow-up 8 weeks after discharge.

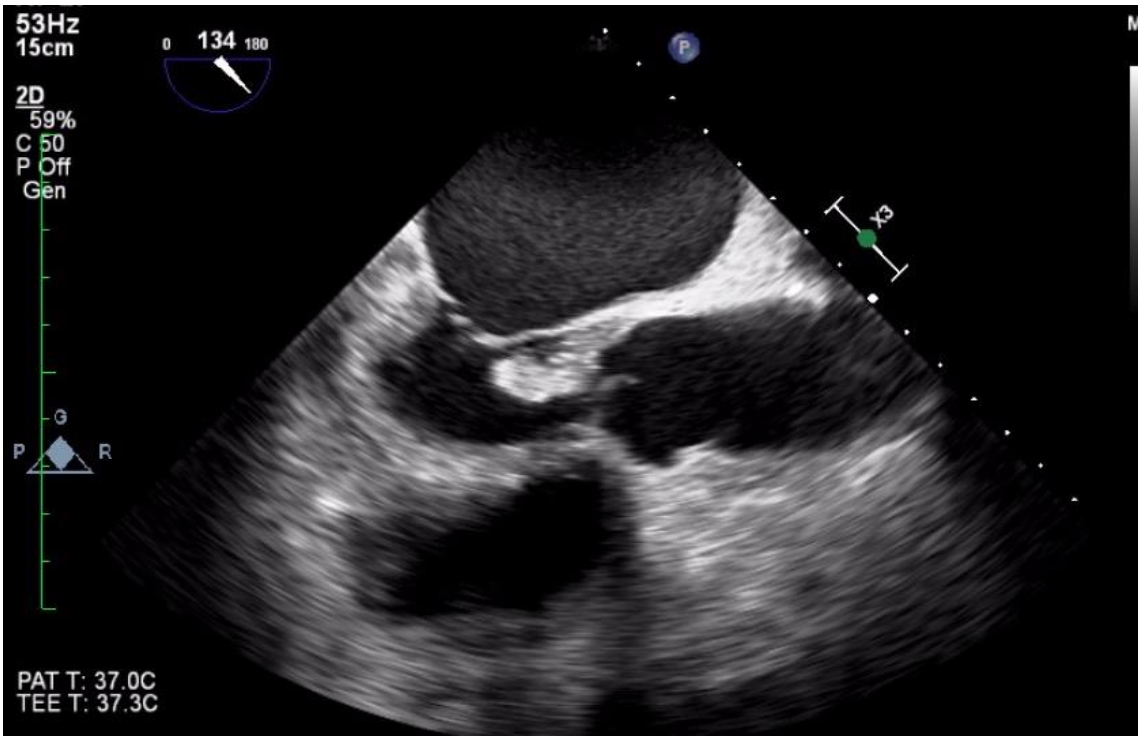

Figure 1. A large aortic valve vegetation on TEE image (Mid esophageal 134 degree)
TEE- transesophageal echocardiography

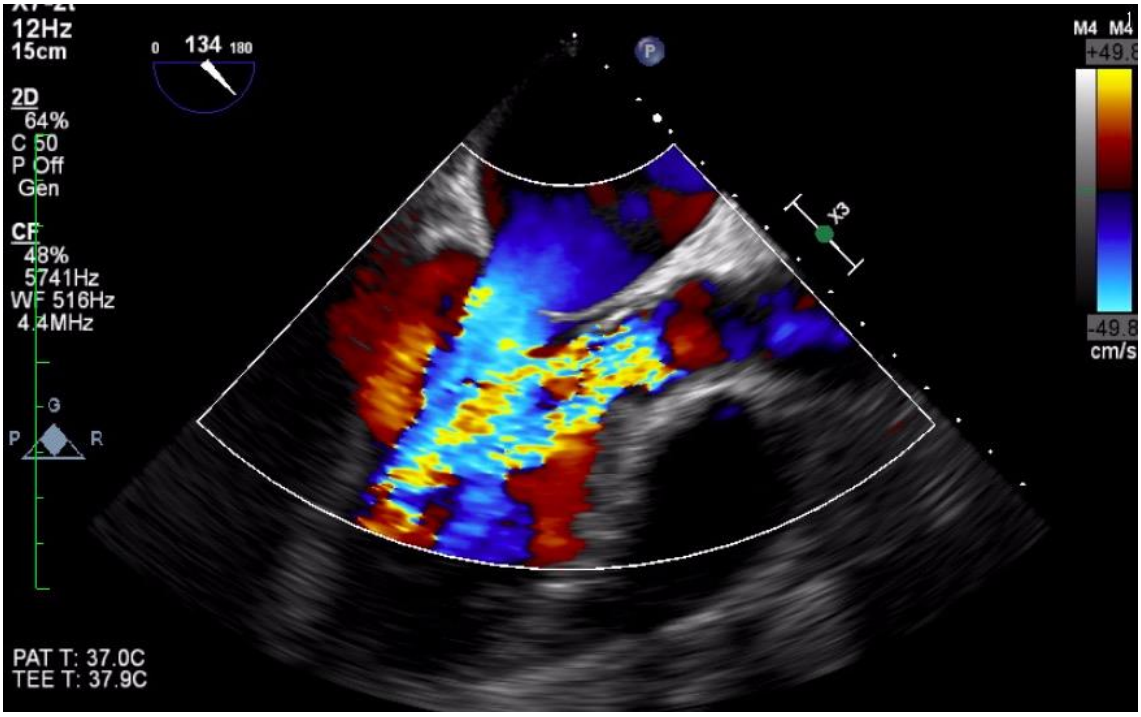

Figure 2. Severe aortic regurgitation caused by infective endocarditis.

Discussion

The ileum is a major colonization site for S. Bovis/S. equinus complex (SBSEC) in human gastrointestinal tract (6). Bacteriemia and infective endocarditis are frequently encountered diseases for human SBSEC infection. Staphylococcus aureus is most frequently detected bacteria for all IE cases (31%) followed by viridans group streptococci (17%), coagulase negative staphylococci (11%), enterococci (10%) and finally SBSEC complex (6%) (7). Interestingly, the percentage of SBSEC-associated IE within all cases of streptococcal IE increased from 10.9% to 23.3% from 1995 to 2005 (8). Within SBSEC bacteria, S. gallolyticus subsp. gallolyticus is a most prominent agent in IE cases across Europe. Another bacterium in this complex, S. gallolyticus subsp. Pasteurianus, is also the leading agent in Asia (9).

Human reports of S. alactolyticus infection are exceedingly rare. S. alactolyticus was reported as a causative agent in a patient with IE complicated by septic emboli (10). Another fatal case of fulminant neonatal sepsis caused by this pathogen was also reported (11).

Our patient presented with S. alactolyticus bacteriemia and aortic valve endocarditis. Aortic valve is the least frequently involved heart valve in SBSEC IE (12). In contrast, there is a tendency for SBSEC bacteria to affect multiple heart valves including mitral and prosthetic valves (12). The reported frequency of embolic events in SBSEC IE ranged from %9 to 55% (13, 14). Fortunately, the patient in our case had no embolic event confirmed by a neurologic exam and brain MRI. That could be related to relatively early diagnosis and prompt starting of antimicrobial therapy.

Conclusion

There is unmet need for better clarification of infective endocarditis caused by SBSEC bacteria. An umbrella term SBSEC contains many subspecies. The new SBSEC taxonomical grouping (1) brings new challenges and opportunities to clinicians. More reliable estimates of SBSEC related IE frequency and incidence could be obtained via the correct identification of SBSEC bacteria in each IE case, which provides better clarification of SBSEC IE epidemiology.

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