

***Streptococcus porcinus* Endocarditis: The First Reported Case In Humans**

***Streptococcus porcinus* Endokarditi: İnsanlarda Bildirilen İlk Olgu**

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ABSTRACT

Streptococcus porcinus is a beta hemolytic streptococcus and was first isolated from swine in the year 1937. It can cause cellulitis, endocarditis, sepsis, cervical lymphadenitis and spontaneous abortions in animals, especially pigs. In humans the microorganism has been isolated from blood, wound, placenta, urine, cervix and vagina. A few case of invasive *S. porcinus* infections (bacteremia and brain abscess) have been reported to date. In available literature no case of endocarditis caused by *S.porcinus* was found to date. In this article we present the first reported case of *Streptococcus porcinus* endocarditis in humans; in a 29-year-old pregnant woman to emphasize that this organism can cause severe infections like infective endocarditis.

Key words: *Streptococcus porcinus*, Infective Endocarditis, Endocarditis in Pregnancy

ÖZET

Streptococcus porcinus ilk olarak 1937 yılında domuzdan izole edilen bir beta hemolitik streptokoktur. Hayvanlarda; özellikle domuzlarda selülit, endokardit, sepsis, servikal lenfadenit ve spontan düşüklere neden olabilir. İnsanlarda kan, yara, plasenta, idrar, serviks, vajinadan izole edilmiştir ve bugüne kadar az sayıda invaziv *S. porcinus* enfeksiyonu (bakteriyemi ve beyin absesi) bildirilmiştir. Ulaşılabilen literatürde *Streptococcus porcinus*'un neden olduğu endokardit olgusuna rastlanmamıştır. Bu yazıda 29 yaşında hamile bir kadında tanı koyduğumuz, insanlarda bildirilen ilk *Streptococcus porcinus* endokardit olgusunu, bu organizmanın infektif endokardit gibi ciddi enfeksiyonlara yol açabileceğini vurgulamak için sunuyoruz.

Anahtar Kelimeler: *Streptococcus porcinus*. İnfektif endokardit, Gebelikte Endokardit

INTRODUCTION

Endocarditis is an infection of the endothelial surface of the heart. It is still an important problem for clinicians because of its mortality, morbidity and serious complications (1). *Streptococcus* species especially viridans streptococcus are commonly associated with endocarditis. The other streptococcus species are rarely reported (1, 2).

Streptococcus porcinus is a beta-hemolytic streptococci in Lancefield group NG1 (A1, C1), NG2, NG3, E, P, U, or V antigen (3). Pigs, sheep, rabbits, dogs, guinea pigs, and cattle can be a reservoir for *S. porcinus* (3). In pigs it has been shown to colonize the genital and upper respiratory tracts and it can be caused cellulitis, endocarditis, sepsis, cervical lymphadenitis and spontaneous abortion (4, 5). In humans a few case of *S.porcinus* infections were reported and most of them

are genitourinary tract infections in women (3, 5). In this article, we present a case of endocarditis caused by *S. porcinus* to draw attention that it can cause serious invasive infections and lead to life-threatening outcomes.

CASE REPORT

A 22-week pregnant female patient was admitted to the obstetrics and gynecology outpatient clinic with complaints of fever, loss of appetite, weight loss, weakness and shortness of breath for 4 weeks. She was 29 years old and had no other known disease other than valvular heart diseases. At the time of admission she had fever to 38.2°C. Her blood pressure was 128/65 mm Hg and heart rate was 108 beats/minute. Initial physical examination revealed grade 3/6 systolic murmur at mitral focus. Peripheral

signs of infective endocarditis such as Osler's nodule and Janeway lesion were absent. The rest of her physical examination was unremarkable.

The patient was consulted with cardiologist. On transthoracic echocardiography 10 mm dimensions vegetation on the mitral valve anterior leaflet was detected and the patient was admitted to the cardiology clinic with a prediagnosis of infective endocarditis. After 4 blood cultures were taken ceftriaxone 1*2 gr/day i.v was started empirically. On the second day of admission she was evaluated by a perinatology specialist. Because of the major malformation of the fetus termination was recommended by the perinatology council and the fetus was terminated at 22 weeks of gestation.

On admission a white blood cell count of 6,7 K/uL with 76,6% neutrophils, haemoglobin of 8,8 g/dL, hematocrit of 26,7 % and platelets of 211 K/uL, C-reactive protein (CRP) of 2,19 mg/dl, erythrocyte sedimentation rate (ESR) of 88mm/h and procalcitonin of 0.01 ng/mL. The other laboratory tests were in normal range. Four blood culture samples incubated to BACTEC 9240 (Becton Dickinson Instrument System, Sparks, USA) and in three of them *S.porcinus* grew up. Identification of the microorganism was performed by Phoenix100™ (Becton Dickinson Instrument System, Sparks, USA). Antibiotic susceptibility of the grown microorganism was determined by using the disc diffusion method according to the Clinical Laboratory Standard Institute criteria (6). *S.porcinus* grew in three of the four blood cultures taken and it was susceptible to amoxicillin, amoxicillin/clavulanic acid, cefuroxime, ceftriaxone, cefepim, ciprofloxacin, erythromycin, clindamycin and vancomycin.

Ejection Fraction (EF) was calculated 60% on transthoracic echocardiography on admission. Approximately 10*10 mm dimensions mobile mass was seen on the anterior mitral leaflet with grade 3 mitral

regurgitation. Restricted mitral leaflet movement was observed due to calcification of leaflets. Mitral valve peak/ mean gradient were calculated 28mmHg/18 mmHg. Mitral valve area was measured 1,3 cm² with Doppler pressure half-time. Grade 4 aortic regurgitation was seen on aortic valve without significant gradient increase.

Under the ceftriaxone treatment her symptoms were improved and the vegetation size decreased from 10 mm x 10 mm to 5 mm x 6 mm. There was no growth in blood cultures taken while antibiotic treatment was continued but at the 4rd week of antibiotic treatment shortness of breath and weakness started again. On transesophageal echocardiography, the vegetation size was calculated 5 mm x 6 mm. Severe mitral regurgitation (grade 4) was detected. Approximately 2 mm width defect was observed on anterior mitral leaflet due to perforation of valve. Different mitral regurgitant jet was seen on perforation side apart from center severe mitral regurgitant jet. With this clinical and echocardiography findings the patient underwent mechanical mitral and aortic valve replacement on the 35th day of antibiotic treatment was started. The patient's general condition improved after surgery, and was discharged with warfarin treatment and outpatient control.

DISCUSSION

Infective endocarditis (IE) is an infectious disease of endocardium of heart that involves the cardiac valves (native or prosthetic) or an indwelling cardiac device. The incidence of IE has been reported to be ranging from 3 to 7 per 100000 person-years (2). Although it is rare, it maintains its importance due to high mortality, morbidity and severe complication (1). During pregnancy, the incidence of IE has been reported to be 0.006% and in patients with cardiac disease the incidence is 0–1.2% (7,8). Our patient had valvular

diseases before pregnancy and according to the literature in pregnancy IE develops either as a complication of a pre-existing cardiac lesion or as a result of intravenous drug abuse (8).

Streptococcus porcinus is belonging to Lancefield serological groups E, P, U, and V. It is a beta-hemolytic streptococci and first isolated from swine in 1937 (3). It can cause infections both in animals and humans (3-5). In 2005 Duarte et al. reported phenotypic and genotypic characteristics of 25 *S.porcinus* strains from human sources and most of the strains are isolated from genitourinary tract specimens (5). *S. porcinus* infections in humans are infrequent and severe invasive infection like brain abscess, bacteremia etc. has been reported in only a few cases (3,5,9).

In studies *S. porcinus* infections during pregnancy have been associated with vaginal colonization, chorioamnionitis and spontaneous preterm stillbirth (10,11). Our patient was 22-week pregnant on admission. She lived in a village and had close contact with animals. We think that she may have colonized beforehand, but we do not have any data to prove this. In IE during pregnancy fetal mortality is reported to be about 29% (8). On follow up the fetus was terminated because of major congenital malformation of the fetus, not because of a complication of endocarditis.

The patient had two major criteria (positive blood culture and endocardial involvement) and two minor criteria (fever and predisposing heart condition) according to the modified Duke's criteria. So she met criteria for definitive endocarditis. Medical management with antibiotics is the first choice of treatment in infective endocarditis (1,7). *S.porcinus* is mostly susceptible to many antibiotics like penicillin, amoxicillin, cefuroxime, ceftriaxone, cefepim, ciprofloxacin, erythromycin, clindamycin, levofloxacin, trimethoprim-sulfamethoxazole and vancomycin but most of the colonies resistance to tetracycline (3,5). We

started ceftriaxone 1x2gr/day i.v treatment empirically before the blood cultures resulted and because of the growth of *S.porcinus* in the blood culture we continued the treatment.

The most frequent complication and indication for surgery in IE is heart failure and it presents with dyspnea, pulmonary oedema and cardiogenic shock (7,12). Heart failure results from new or worsening severe aortic or mitral regurgitation primarily as a result of mitral cord rupture, leaflet tear (pseudoleaf), leaflet perforation, or interaction of vegetation mass with leaflet closure. These lesions are best detected using TOE (7,12). In our patient, regression in symptoms and reduction in vegetation size were achieved with ceftriaxone treatment, but during follow up surgical treatment had to be applied to the patient who developed heart failure due to valve perforation.

As a result; *S. porcinus* has been reported rarely as an infectious agent in humans. Most of the reported case in the literature is genitourinary tract infection like chorioamnionitis, vaginitis. Although it seems susceptible to many antibiotics and easily treatable with antibiotic therapy, it should be remembered that it can also cause life-threatening infections such as infective endocarditis and should be treated appropriately.

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Conflict of Interest: The authors declare that they have no conflict of interest.

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