Lactobacillus endocarditis with prosthetic material: a case report on non-surgical management with corresponding literature review

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Abstract

Lactobacilli are rod shaped gram positive bacteria that naturally colonize the human gastrointestinal and genitourinary tracts and occasionally cause disease in humans. Lactobacillus infections are found in patients who are immunocompromized or have severe comorbidities. We report Lactobacillus endocarditis in a 17-year-old adolescent girl with cardiac prosthetic material following surgical correction for complex cyanotic congenital heart disease. Accurate identification of the organism can be delayed. Despite in vivo susceptibility to vancomycin, our patient clinically failed vancomycin therapy but ultimately responded to a six-week course of penicillin, in addition to a 4-week course of clindamycin and gentamicin. She recovered without the need for surgical intervention and has been symptom free for one year. Upon review of the literature, we found that Lactobacillus endocarditis has not been reported in a pediatric patient with complex cyanotic congenital heart disease.

Introduction

Lactobacillus is a facultative gram-positive large rod that is a rare pathogen and is considered normal flora of the oral cavity, gastrointestinal tract, and female genitourinary tract. These bacteria are utilized in probiotic supplements to aid in the treatment of conditions such as antibiotic-associated diarrhea. Lactobacillus infections are almost always seen in patients who are immunocompromised and in those who have underlying structural abnormality of the heart with or without prosthetic material. Lactobacillus bacteremia, albeit rare, is more common than endocarditis. A history of dental manipulation can be elicited in 75% of patients with Lactobacillus endocarditis.

Here we report a case of Lactobacillus endocarditis that was successfully treated without surgical intervention in a 17 year old adoles-

Case Report

Our patient was a 17-year-old adolescent girl with an extensive past medical history that included aortic atresia with a ventricular septal defect (VSD), atrial septal defect (ASD), an interrupted inferior vena cava with drainage to the left superior vena cava, heterotaxy with dextrocardia, ventricular ectopy, pulmonary hypertension and polysplenia. She had an equally extensive surgical history that included Norwood arch reconstruction, VSD closure and conduit revision, Rastelli repair of unroofed coronary sinus, pacemaker implantation for sick sinus syndrome and lastly a cardiac catheterization with a placement of a pulmonary artery stent. Her last cardiac procedure (placement of the pulmonary stent) was 20 months prior to this episode. Socially, she is an active well developed adolescent school girl, who has met all her developmental milestones at the appropriate times and is looking forward to graduating from high school to start college in a few months’ time. She initially presented to her cardiologist with 2 weeks of intermittent fevers. The cardiologist confirmed that she was pale and had dusky nail beds. No new murmurs were heard and a transthoracic echocardiogram showed no vegetation. She later presented to her primary care physician for continuing fever and associated fatigue. Urine and blood cultures were negative for bacterial growth. Co-incidentally she had dysmenorrhea with menorrhagia for which her gynecologist started her on oral contraceptive therapy along with iron supplements for iron deficiency anemia that was confirmed by laboratory studies. Since she was still febrile and fatigued, now with a 4 kg weight loss in 4 weeks, she was hospitalized for further evaluation. She appeared pale, had night sweats, myalgia, and chest pain. Her last dental cleaning was 4 months prior, and was done with appropriate antibiotic prophylaxis. She did not have a history of excessive intake of dairy products, nor was she on any probiotics. Physical examination revealed a tired looking pale teenager who was hemodynamically stable without any respiratory problems. Laboratory studies showed a normal total white blood cell count with mild predominance of neutrophils without any immature forms. She was anemic, with iron deficiency and had normal electrolytes, renal function and hepatic function. A cardiac CT scan showed non-occlusive vegetation in the pulmonary artery (at the root of the conduit) and a pulmonary septic embolus in the left lower lobe. Subsequent transthoracic echocar-diogram confirmed the vegetation in the pulmonary artery. Two peripheral blood cultures were drawn upon admission to the hospital, one of which grew gram-positive rod like bacteria after 76 hours (3.2 days). The blood culture on the second day since admission also grew gram-positive rod like bacteria after 107 hours (4.5 days). All subsequent blood cultures were reported as no growth. She was started on empiric antimicrobial therapy with ceftriaxone and vancomycin dosed appropriately for endocarditis; and gentamicin for synergy at 1 mg/kg every eight hours. She also received a 5 day course of azithromycin for positive Mycoplasma serology (IgG and IgM). On day 6 the microbiology laboratory reported a preliminary identification of the gram positive rod like bacterium as Arcanobacterium haemolyticum, and therefore gentamicin and vancomycin were discontinued, and she was continued on ceftriaxone.

However, she was re-hospitalized after 7 days, for persistent and now almost continuous low grade fever with occasional high grade spikes and associated night sweats. A transthoracic echocardiogram now showed the vegetation to be of the same size and the ESR and CRP had increased. At that time, which was about two weeks since antibiotics incep-tion; the final identification of the gram positive rod like bacterium was reported to be Lactobacillus by Matrix-Assisted Laser Desorption and Ionization method. The organism could not be further speculated and the sus-

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Discussion

Infective endocarditis (IE) due to *Lactobacillus* is relatively uncommon, as compared to IE due to organisms such as HACEK (*Haemophilus aphrophilus, Actinobacillus actinomycetemcomitans, Cardiobacterium hominis, Eikenella corrodens, and Kingella kingae*).1,2,7 The most recent review of *Lactobacillus* infections was done by Cannon et al. in 2005. They report on 241 cases of *Lactobacillus* infections of which 54% were bacteremia and 30% were endocarditis.2 In their review, 63% of patients with *Lactobacillus* endocarditis have structural heart disease, such as history of valvular disease, prosthesis placement, 12% had history of heart disease, such as history of valvular disease.3 Our patient had a very susceptible strain in vitro, and clinically she responded well to a combination of penicillin, clindamycin and gentamicin. We chose to administer multiple antimicrobials in view of the high risk of mortality and morbidity related to surgical intervention in her. There are some more atypical reports of previously healthy patients with *Lactobacillus* endocarditis following ingestion of large amounts of dairy,1,5,8-12 probiotic supplements,12-15 and some following procedures such as colonoscopy and dilation and curettage.16,17 These possibilities were excluded in our patient, as she did not have a history of heavy dairy consumption, probiotic supplementation, or any recent gastrointestinal or genitourinary procedures.

Mortality rates reported for *Lactobacillus* endocarditis include 23% and 27%.2,3 High mortality is attributed to the unique pathogenic potential of *Lactobacilli*. *Lactobacilli* have been found to aggregate platelets, bind both fibronectin and fibrinogen, and adhere to collagen types I and V, which compose the extracellular matrix of endothelial cells and have been shown to be present at sites of endothelial damage.18

Conclusions

In summary, we report a unique case of an 17-year-old adolescent girl with a significant past medical and surgical history of complex cyanotic congenital heart disease, who was cured with multiple antimicrobials that included penicillin infusion, gentamicin and clindamycin; and most importantly, without surgical intervention.

References