Bacterial Endocarditis in an Intravenous Drug User with a Ventricular Septal Aneurysm

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Abstract

An aneurysm of the membranous portion of the ventricular septum (AMS) is a common complication of spontaneous ventricular septal defect closure. They have been shown to increase the incidence of cardiac pathology notably bacterial endocarditis. Because of such a severe threat, it may be an important anomaly to assess in high risk patients.

A 45-year-old woman with a history of intravenous drug use presented in septic shock with end organ damage requiring intubation, broad spectrum antibiotics, and vasopressors. Physical examination displayed a 2/6 systolic ejection murmur heard loudest at the left lower sternal border. Echocardiography confirmed a mobile tricuspid vegetation; as well as, an aneurysmal deformity. Because of such a severe threat, it may be an important anomaly to assess in high risk patients.

Introduction

An aneurysm of the membranous portion of the ventricular septum (AMS) has been shown to promote bacterial endocarditis among other cardiac consequences.1 Because an AMS is a common result of spontaneous ventricular septal defect closure it is an important anomaly to assess, especially in high risk patients.2 This report highlights a case of bacterial endocarditis (BE) in a high risk patient due to her intravenous drug use (IVDU) and anatomical abnormalities.

Case Presentation

A 45-year-old woman with history of IVDU and hepatitis C presented from an outside facility in septic shock with end organ damage requiring intubation, broad spectrum antibiotics, and vasopressors. Physical examination displayed a 2/6 systolic ejection murmur heard loudest at the left lower sternal border. Echocardiography confirmed a mobile tricuspid vegetation; as well as, an aneurysmal deformity. During her initial history the patient stated that her VSD had been diagnosed in childhood. A cardiac catheterization showed a membranous ventricular septal aneurysm protruding from the left ventricle into the right ventricle with no evidence of transseptal flow. This aneurysm likely gave the appearance of the perimembranous VSD seen on echocardiography.

Discussion

VSDs are the most common congenital heart defect, but the prevalence decreases with age because many close spontaneously.3 During closure, if the tricuspid valve leaflet adheres to the defect an AMS can develop.4 The objective contribution of the AMS to the resultant endocarditis is unknown at this point. This sentiment raises the question if AMS detection would warrant preventative intervention for associated pathologies.
in-hospital and 22 to 27 percent by 6 months.\textsuperscript{5} VSDs themselves are not benign either. Otterstad et al. found a 15% incidence of BE in their sample of adult patients with a VSD.\textsuperscript{3} Another observational study from Sweden showed a 20 times greater risk of BE compared to that of the general population.\textsuperscript{5} Furthermore, Yilmaz et al. found an almost three-fold increased incidence of BE in patients with AMS over isolated VSDs. They also recommend that AMSs be surgically resected with the residual defect closed by a patch.\textsuperscript{1} Even with this potential compound risk, the ACC/AHA does not give guidance in the setting of AMS and recommends against antibiotic prophylaxis for BE in patients with acyanotic, uncomplicated VSD.\textsuperscript{7} These recommendations are based off expert opinion instead of clinical trial data.\textsuperscript{8} Additional risk factors are not specified either including IVDU, poor dentition, valvular disease, prosthetic heart valves, presence of intravascular devices, chronic hemodialysis, or HIV infection.\textsuperscript{9,10}

**Conclusion**

In the presented case, medical or surgical intervention may have been indicated before the development of BE due to her risk factors of AMS and IVDU. This case exemplifies a patient predisposed to endocarditis who was at higher risk than the general population. The objective contribution of the AMS to the resultant endocarditis is unknown at this point. Further studies are needed to assess if endocarditis prophylaxis or surgical repair in high risk AMS patients is beneficial.

**Declarations:**

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**References**

1. Arslan M, Tatar H, O Y. Aneurysm of the membranous septum in adult patients with

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**Figure 1.** Four chamber view at 0 degrees of transesophageal echocardiogram showing a large, pedunculated, highly mobile vegetation on the right atrial aspect.

**Figure 2.** Left ventricular function study shows a bilobular membranous ventricular septal aneurysm protruding from the left ventricle into the right ventricle filling with contrast.