Case report

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Multiple ventricular septal defects in an adult

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Introduction

Ventricular septal defect (VSD) is the second most commonly occurring congenital heart defect in adults. The incidence in adults is 10 %, as most defects usually close during early childhood. Mortality increases with age, and 75% at the age of 60. Symptoms and clinical presentation depend mainly on the size of the VSD. Patients with small VSDs usually remain asymptomatic. Larger VSDs can cause hemodynamic compromise, increased risk of infective endocarditis and reversal of shunt leading to Eisenmenger syndrome.

Case presentation

A 68-year-old man with a past medical history of type II diabetes mellitus, hypertension, hyperlipidemia and a "cardiac murmur", presented to the emergency department with severe substernal chest pain, radiating to his neck. Further workup revealed elevated troponins, and a right bundle branch block on electrocardiogram (EKG). He was initially diagnosed as having a non-ST elevation acute myocardial infarction (NSTEMI). His vital signs were unstable as he was tachycardic and hypotensive despite receiving intravenous fluids. Two-dimensional echocardiogram showed hypokinesia of the apical septum, multiple ventricular septal defects with a left to right shunt (**Figures A, B & C**). There was mild aortic regurgitation, severely impaired right ventricular systolic function, and severe pulmonary hypertension. Because of his co morbidities, a surgical approach was not advisable. The patient ultimately expired.

Discussion

Adults with ventricular septal defects can have an array of symptoms depending on the size of the defect. They can remain asymptomatic with small VSDs with only a continuous murmur. Large VSDs have a left to right shunt, which overtime may result in a shunt reversal and cause Eisenmenger syndrome. In addition, patients are at a high risk of acquiring bacterial endocarditis. Diagnosing VSDs heavily relies on echocardiograms. Chest x-ray may show cardiomegaly and increased pulmonary congestion and EKG may show biventricular hypertrophy. In the middle-aged population, some patients with continuous murmur may present with right bundle branch block that should prompt further evaluation with echocardiogram.

Our patient had multiple defects within the ventricular septum associated with apical hypokinesia. His right ventricular systolic function was impaired, and he had evidence of severe pulmonary hypertension, but surprisingly, he did not have a shunt reversal. Complications of untreated VSD include shunt reversal, pulmonary hypertension and Eisenmenger syndrome, aortic valve prolapse or regurgitation, dysrhythmias and infective endocarditis.

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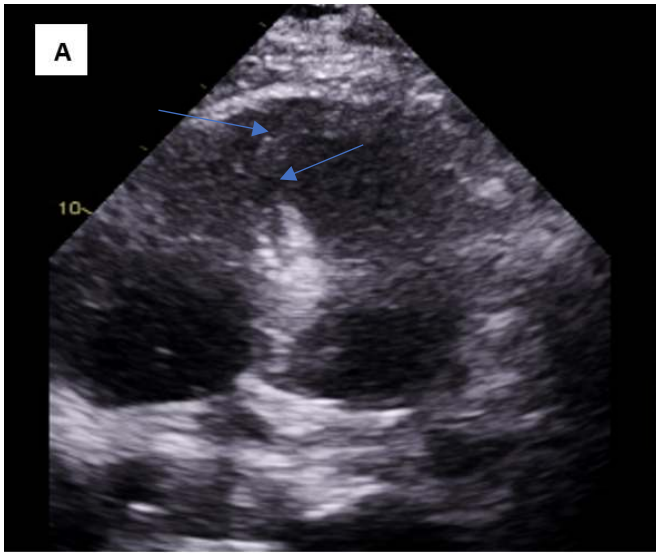
Figure A. Two-dimensional echocardiogram showing four chamber view of with multiple ventricular septal defects (arrow), severely impaired right ventricular systolic function, and apical hypokinesis



Figures B and C. Flow doppler demonstrates increased flow through the septal defect (arrows), with a dominant left to right shunt