

Echoes of Danger: Unraveling the Mystery of Ruptured Sinus of Valsalva Aneurysm Amidst Infection Havoc

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Introduction: Sinus of Valsalva Aneurysm (SOVA) is a rare cardiac condition, affecting approximately 0.09% of the population, with a higher incidence in males. Ruptures typically occur between the ages of 20 and 40. This condition can arise from both congenital defects and acquired causes, such as infections. Many cases are discovered incidentally through cardiac imaging. Here, we present a case of acute heart failure resulting from a ruptured SOVA, precipitated by an infection.

Case Description: A previously healthy 22-year-old male presented to the emergency department with sudden onset palpitations, breathlessness, and chest pain. On examination, he was tachycardic but normotensive. An electrocardiogram (ECG) revealed sinus tachycardia. Initial auscultation showed clear lungs and no heart murmurs. Blood tests indicated elevated high-sensitivity Troponin-T, leukocytosis, elevated C-reactive protein, and abnormal kidney function. The initial diagnosis was pneumonia complicated by myocarditis and acute kidney failure. His condition worsened during admission, with significant signs of acute heart failure, including elevated Pro-BNP levels and lung congestion on chest X-ray. After 48 hours, he had a loud continuous murmur, raised jugular venous pulse (JVP), and bilateral lung crepitations. A transesophageal echocardiogram revealed a ruptured right coronary cusp at the aortic root, causing a shunt into the right atrium and resulting in right atrial and ventricular volume overload. An urgent referral to a Cardiothoracic Surgeon led to immediate surgical repair. Post-surgery, his condition progressively improved. This case was concluded to be a ruptured SOVA triggered by a recent bacterial infection.

Discussion: Ruptured SOVA is an uncommon cause of acute heart failure. Diagnostic imaging, primarily transthoracic and transesophageal echocardiography, is essential. In cases of ruptured SOVA, color Doppler can identify flow through the shunts. Additional imaging techniques such as magnetic resonance imaging (MRI), contrast aortography, and cardiac computed tomography (CT) serve as confirmatory or supplemental tests. The primary treatment for ruptured SOVA is surgical intervention.

Conclusion: Ruptured SOVA should be considered in the differential diagnosis of acute heart failure in previously healthy young adults.

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