

CASE REPORT

Isolated pulmonic valve endocarditis presenting as neck pain

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We discuss a unique case of a 52-year-old man with no history of intravenous drug use or dental procedures who presented with neck pain, 2 weeks of fevers, chills, night sweats, cough, and dyspnea found to have isolated pulmonic valve (PV) endocarditis. The patient did not have an associated murmur, which is commonly seen in right-sided infective endocarditis. A transthoracic echocardiogram showed a thickened PV leaflet, with subsequent transesophageal echocardiogram showing a PV mass. Speciation of blood cultures revealed *Streptococcus oralis*. In right-sided infective endocarditis, usually the tricuspid valve is involved; however, in our case the tricuspid valve was free of any mass or vegetation. The patient did meet Duke criteria and was thus started on long-term intravenous antibiotics for infective endocarditis. The patient's symptoms quickly improved with antibiotics. A careful history and evaluating the patient's risk factors are key in earlier detection of infective endocarditis (IE). Because of early detection and a high index of suspicion, the patient had no further complications and did not require any surgery. In conclusion, clinical suspicion of right-sided IE should be high in patients who present with persistent fevers and pulmonary symptoms in order to reduce the risk of complications, and to improve outcomes.

Keywords: *pulmonic; endocarditis; vegetation; septic emboli*

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Received: 5 September 2015; Revised: 13 October 2015; Accepted: 16 October 2015; Published: 11 December 2015

Isolated pulmonic valve endocarditis (PVE) is a rare event that is commonly associated with intravenous drug use (IVDU) and other risk factors. We present a unique case of a man complaining of neck pain found to have bacteremia with cervical discitis and PVE. We discuss the manifestation of PVE in a patient without common risk factors and its clinical and pathologic associations.

Case report

A 52-year-old man with significant history only of remote non-injection drug use presented with neck pain, 2 weeks of mild fevers, chills, night sweats, unintentional weight loss, dyspnea, and dry cough. On physical examination, he appeared non-toxic with poor dentition. He was febrile with a white cell count of 25,000/ μ L. Magnetic resonance imaging done for the neck pain was concerning for cervical discitis, while a computed tomography (CT) chest scan done for his pulmonary symptoms was concerning

for multiple septic pulmonary emboli. Initial blood cultures grew Gram-positive cocci in chains. Because of concerns of infective endocarditis (IE), ampicillin and ceftriaxone were started. A transthoracic echocardiogram (TTE) showed a thickened pulmonic valve (PV) leaflet with a pulmonary artery systolic pressure of 58 mmHg. A subsequent transesophageal echocardiogram (TEE) revealed a 2-cm, mobile, linear PV mass with moderate, eccentric pulmonic regurgitation (Fig. 1). CT angiogram showed a pulmonary embolism distal to the right main pulmonary artery with distal propagation. Speciation of blood cultures showed pan-sensitive *Streptococcus oralis*. Meeting Duke criteria for IE, he was discharged on a 6-week course of ceftriaxone *via* a tunneled catheter. He showed dramatic improvement within a short period and had no further complications. Hence, surgical intervention was deferred. Overall, his prognosis was more promising due to early detection and no ensuing complications. However, the patient was subsequently lost to follow-up.

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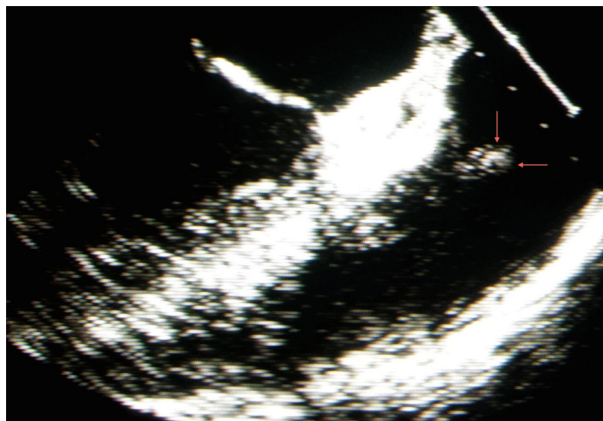


Fig. 1. Pulmonic valve vegetation seen on TEE (red arrows).

Discussion

Right-sided infective endocarditis (RSIE) is a rare phenomenon that predominantly involves the tricuspid valve, with or without involvement of the PV. However, isolated PV vegetation is an extremely rare event that typically occurs in 1.5–2% of patients hospitalized with IE (1). From 1960 to 2005, there were only 45 reported cases of PVE in structurally normal hearts (2). Proposed mechanisms for lower incidence of RSIE are attributed to the right heart valves having lower prevalence of congenital malformations, differences in the endothelium and vascularity, lower pressure gradients leading to lower jet velocities and reduced stress on the right-sided endocardium as well as reduced oxygen content in the venous blood (3, 4).

Identifying risk factors for RSIE helps heighten clinical suspicion to make an earlier diagnosis, which improves outcomes. Major risk factors are IVDU (76%), congenital cardiac defects, sepsis, alcohol abuse, diabetes, pacemaker, and central venous catheter implantation. In about 28% of the cases no specific risk factor is identified (2, 4–6). In our case, absence of these risk factors made the diagnosis more challenging.

Management and subsequent prognosis of this unique entity is determined by early and high diagnostic suspicion. This was particularly difficult in this case because of the dominating extra cardiac signs and symptoms.

Presentation of RSIE often mimics primary pulmonary symptoms, such as fevers, dyspnea, and cough, with or without a normal chest x-ray (7). In roughly 50% of reported cases, there was an associated pulmonic regurgitation murmur (8), which was not appreciated in the above patient. A PV thrombus cannot be ruled out; however, our clinical suspicion was high for PV vegetation given our patient's presenting symptoms in addition to the presence of multiple septic emboli.

In detecting PV vegetations, TEE has higher sensitivity and specificity in comparison to TTE. Radiographic imaging can often confirm the presence of pulmonary

embolism and septic emboli. The most common microbial culprits are *Staphylococcus aureus*, coagulase-negative *Staphylococcus*, and Group B *Streptococcus*, with septic pulmonary emboli being seen in approximately 75% of patients (9–11). In non-complicated cases, initial management (12) should be with antibiotics only, as response is often seen within 6 weeks of therapy (13). A retrospective study has shown that vegetations less than 1–2 cm in RSIE commonly respond to medical treatment (14).

Indications for surgery include persistent bacteremia and fevers despite appropriate parenteral antibiotic therapy, recurrent pulmonary emboli, locally invasive infections such as a perivalvular abscess, cardiovascular instability, or progressive valve destruction and incompetence leading to heart failure. Common surgical options may be divided into 'prosthetic' – valve replacement or prosthetic annular implantation – and 'non-prosthetic' – Kay's or DeVega's annuloplasty, bicuspidization, valvectomy, debridement of the infected area, or excision of the vegetation (12). Overall, the prognosis for RSIE including isolated PVE is generally better than left-sided IE, with the latter carrying a higher mortality rate (15).

Conclusions

We document a rare case of isolated PVE that had a non-specific presentation. Evaluation of the patient's risk factors and a careful history are key in earlier detection of RSIE. This can help reduce hospital-related costs *via* avoiding complications and even the need for surgery. Hence, high index of suspicion is required as early diagnosis can drastically improve outcomes while avoiding complications and preventing the need for surgery. In our case, prognosis was favorable due to early detection and no ensuing complications.

Acknowledgements

We would like to thank the Department of Medicine and Cardiology for their continued support.

Conflict of interest and funding

The authors have not received any funding or benefits from industry or elsewhere to conduct this study.

Consent

Informed consent was obtained from the patient and his family for educational use of the below mentioned data and no personal patient information has been disclosed.

Disclosure

None of the authors have any financial or personal bias that would inappropriately compromise the publication of this work.

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