A Culture Negative - Isolated Pulmonary Valve Endocarditis With 5 cm Vegetation

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Introduction: Isolated pulmonary valve endocarditis (PVE) is a rare entity accounting for 1.5-2% of all cases of endocarditis. It’s often missed during echocardiographic evaluation given the limited visibility of the pulmonary valve (PV), low index of suspicion and rarity of the pathology. Prompt identification and treatment is necessary to gain favorable outcome. Here we present a case of isolated PV endocarditis with large vegetation measuring over 5 cm which clinically manifested as cavitary pneumonia and was radiographically masquerading as thromboembolism.

Case presentation: A 37-year-old Caucasian male with no prior medical history sparing intravenous methamphetamine and heroin use presented to ED complaining of fever (T-max-104°C), chills, dyspnea, productive cough, malaise since four weeks. Physical exam was notable for murmur at right upper sternal border and scattered exploratory wheezes in both lung. WBC, inflammatory markers were severely elevated. CT-chest showed numerous cavitary pulmonary lesions, dilated pulmonary-artery suggesting pulmonary arterial hypertension possibly related to chronic thromboembolism. Blood cultures were positive for MSSA. TTE showed mobile density involving the pulmonic valve on pulmonary artery side measuring 1.77x0.772 cm was concerning for vegetation. No acute abnormality was identified on the electrocardiogram (EKG).

Working diagnosis: Treatment was started with IV vancomycin with working diagnosis of endocarditis. After 4-weeks treatment with IV Vancomycin, patient had significant clinical improvement. Repeat blood cultures were negative however a repeat TEE was obtained which showed persistent vegetation of the pulmonary valve that grew exponentially and was now measuring in excess 5 cm. Given the size & rapid growth of the vegetation despite being on IV vancomycin, patient was sent for surgical correction.

Management: He underwent transverse pulmonary arteriotomy and resection of a 5-cm vegetation adherent to posterior-leaflet of PV. Pathology report confirmed the fibrin deposition with acute inflammation compatible with vegetation. Patient was discharged on 6-week therapy with Daptomycin for bacteremia and Ceftaroline for better lung penetration.

Learning Objectives:
- Right sided endocarditis accounts for approximately 10% of all cases of infective endocarditis. Endocarditis with simultaneous PV involvement is seen in less than 2% of the cases. Risk factors for right sided endocarditis include IV-drug use, ICD, intravenous devices such as central line,
intra-aortic balloon-pump, ventricular assist device and immunocompromised status. Commonly identified causative agents are staphylococcus aureus, coagulase-negative Staphylococci, and group-B-Streptococci. IE carries high in-hospital mortality-rate of 15-20% and a 1-year mortality rate of 40%. Modified-DUKE criteria are used as diagnostic tool for patients with suspected IE. Given the low incidence of PVE, Transthoracic echocardiography(TTE) is usually the initial test in most patients however transesophageal(TEE) should be considered when TTE is negative and the index of suspicion is high. A review of literature done by Gonzalez-Alujas et al. reported sensitivity of TTE between 40-63% and that of TEE to be 90-100%. As seen in our case, both TTE and TEE were diagnostic of TVE showing both smaller 1.77x0.772 cm as well as larger >5cm vegetation. Cardiac MRI is an excellent modality to evaluate pulmonic valve and to quantify pulmonic insufficiency, however given lack of PI findings on TTE and TEE, cardiac MRI was deferred in our case. Review of available literature suggest that PVE usually has a benign course. It is thought to be reversible and responds well to parenteral antibiotic therapy administered for a recommended duration of 4-6 week. Surgery can be considered in patients that have persistent bacteremia, septic pulmonary emboli and formation of abscess despite adequate antibiotic therapy. Early surgical intervention is recommended in patients with hemodynamic instability and in those with vegetation larger than 2 cm & causative organisms identified to be staphylococcus. Vegetations >2cms carry a mortality rate of as high as 25% as compared to 3.8% with those <2 cm.