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Multi-Valve Multi-Organism Infective Endocarditis Associated with Giant Tricuspid Valve Vegetation

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Case Report

A 42-year-old female with a history of intravenous drug use as well as hepatitis B and C presented with septic shock and respiratory distress. Blood cultures grew beta-haemolytic group-B streptococcus species and methicillin-sensitive staphylococcus aureus. She was treated with intravenous antibiotics and was admitted to the intensive care unit for inotrope support and mechanical ventilation. Transthoracic echocardiography demonstrated a giant vegetation on the tricuspid valve measuring 6.6 centimetres in length causing severe tricuspid regurgitation (Figure 1). Additionally, there was a large 2-centimetre vegetation on the aortic valve as well as probable involvement of the posterior leaflet of the mitral valve. While being considered for urgent surgery her pupils became fixed and dilated. Urgent computed tomography scan of her brain demonstrated massive embolic infarcts involving the right anterior and middle cerebral artery territories. The patient passed away shortly after hospital admission.

Discussion

There are only few reports of large tricuspid valve vegetations in the literature. Song et al reported a case of a 33-year-old male presenting with right-sided heart failure who developed a vegetation on the tricuspid valve following catheter ablation [1]. The patient underwent successful tricuspid valve replacement. Furui et al described a case of a 71-year-old male who developed ventricular septal perforation caused by right-sided infective endocarditis and a 1.5-centimetre vegetation

on the tricuspid valve [2]. The patient successfully underwent vegetation excision, debridement, ventricular septal perforation patch closure, and tricuspid valve replacement. This patient had only single-organism and single-valve involvement: methicillin-sensitive staphylococcus aureus was identified as the sole organism, involving only the tricuspid valve.

Our case is unique for 2 reasons. First, the giant tricuspid valve vegetation identified is the largest reported in the literature to date. Second, this case highlights the increased morbidity and mortality of infective endocarditis associated with intravenous drug use, with often multiple valves and multiple organisms being implicated. The other reported cases of tricuspid valve vegetation in the literature occurred in non-intravenous drug users. Those patients were all successfully treated before major multi-organ septic and embolic complications. In comparison, our patient had already developed pulmonary septic emboli at the time of admission, and died shortly after admission from infarcts caused by septic emboli to her brain before any surgical treatment. This demonstrates that even with best available medical care, infective endocarditis in intravenous drug users can have a very high morbidity and mortality rate. We hypothesize that several factors may have contributed to the patient's mortality in this case: (1) The intravenous drug user is less likely to present to medical attention early; (2) due to intravenous drug use and the possibility of needle sharing and recycling, multiple organisms are often involved. In our case, both staphylococcus aureus and streptococcus species were implicated; (3) the involvement of multiple heart valves is more likely in intravenous drug users. Our patient was found to have vegetations on her tricuspid, aortic, and mitral valves. This is very different to the reported cases of single-organism tricuspid valve-only infective endocarditis in non-intravenous drug users.

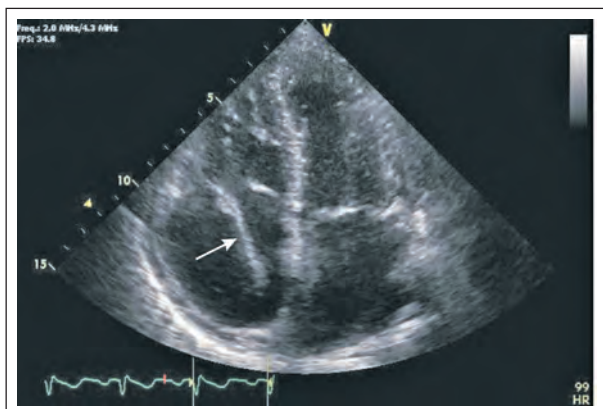


Figure 1. Apical 4-chamber view of transthoracic echocardiogram demonstrating the giant vegetation on the patient's tricuspid valve measuring 6.6 cm in length (arrow), causing severe tricuspid regurgitation.

References:

1. Song MH, Usui M, Usui A, et al. Giant vegetation mimicking cardiac tumor in tricuspid valve endocarditis after catheter ablation. *Jpn J Thorac Cardiovasc Surg* 2001; 49: 255–7.
2. Furui M, Ohashi T, Yoshida T, et al. Ventricular septal perforation caused by right-sided infective endocarditis associated with giant vegetation. *Ann Thorac Surg* 2010; 89: 959–61.

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