MMJ

Malta Medical Journal, 34 (3): Pages (2022)

http://mmsjournals.org/index.php/mmj

CASE REPORT

When three is not a magic number – a case of native triple-valve endocarditis caused by *Streptococcus agalactiae*

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We present a case of a 47-year-old female who presented with septic shock and a hyperosmolar hyperketotic state, accompanied by episodes of unresponsiveness. As part of the extensive investigations which took place, a transoesophageal echocardiogram (TOE) revealed infective endocarditis of the tricuspid, pulmonary and aortic valves. Blood cultures showed evidence of bacteraemia with Streptococcus agalactiae.

After an initial improvement on intravenous antibiotics, the patient's condition deteriorated following multiple septic emboli to the lungs from the pulmonary valve vegetation, leading to urgent referral for valve replacement. A mechanical aortic, tissue pulmonary and tricuspid valve replacements were performed in a tertiary centre in the United Kingdom. The postoperative course was complicated by recurrent infections of the sternotomy wound with eventual wound dehiscence and overwhelming sepsis.

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Introduction

Infective endocarditis (IE) is a rare condition associated with a high mortality, with a global incidence of between 1.5 to 11.6 cases per 100,000 people.[1] Multiple valve involvement in IE is associated with higher risk of heart failure, perivalvular complications and need for surgical intervention.[2] Multiple risk factors are associated, however the most recognised include intravenous drug use (IVDU), valvular heart defects and valve prostheses.[3]

Case Report

A 47-year-old female, who was known to suffer from Type II Diabetes Mellitus, obesity hypoventilation syndrome and poor dental hygiene, originally presented with haemodynamic compromise secondary to sepsis, as well as a hyperosmolar hyperketotic state. There was no history of valvular/structural heart disease or IVDU. The hyperosmolar hyperketotic state was controlled after optimisation of insulin treatment and the blood glucose was kept in tight control all throughout hospital stay.

The patient was noted to have episodes of unresponsiveness, leading to investigations to exclude a cardiogenic cause, including a transthoracic echocardiogram which revealed multiple valvular vegetations. A subsequent TOE confirmed a large vegetation on the pulmonary valve (Figure 1) resulting in severe pulmonary regurgitation, infective involvement of the tricuspid valve with a torn chorda (Figure 2) resulting in a flail septal leaflet and severe tricuspid regurgitation, as well as infection of the aortic valve resulting in cusp retraction and severe eccentric aortic regurgitation. Blood cultures cultivated *Streptococcus agalactiae*, which was sensitive to Ceftriaxone and Vancomycin. Despite treatment, multiple episodes of septic embolization to the lungs occurred, causing a fluctuating clinical course.

Figure 1 TOE showing the pulmonary valve vegetation

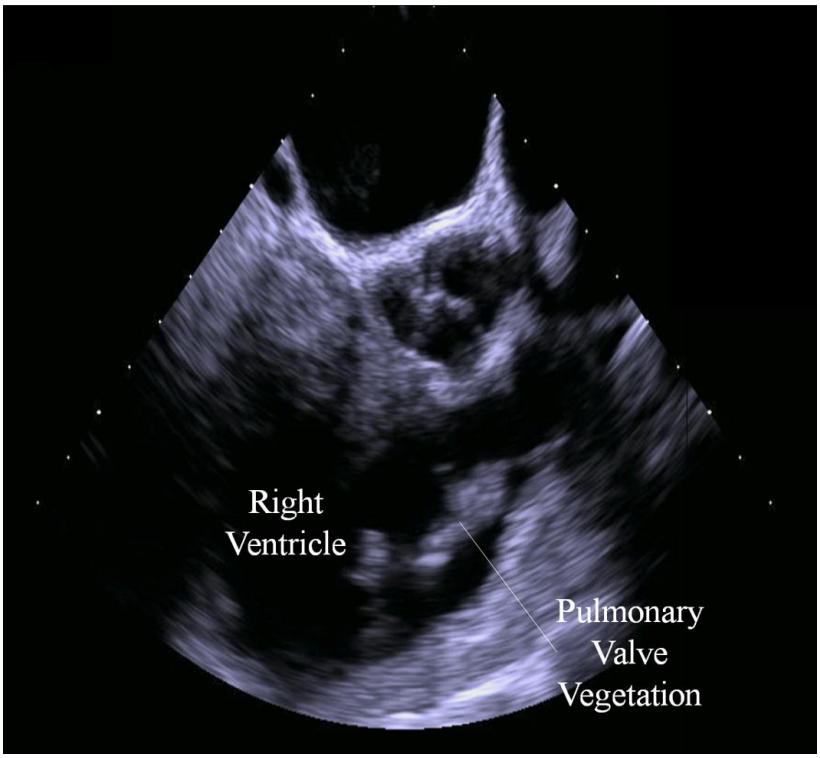
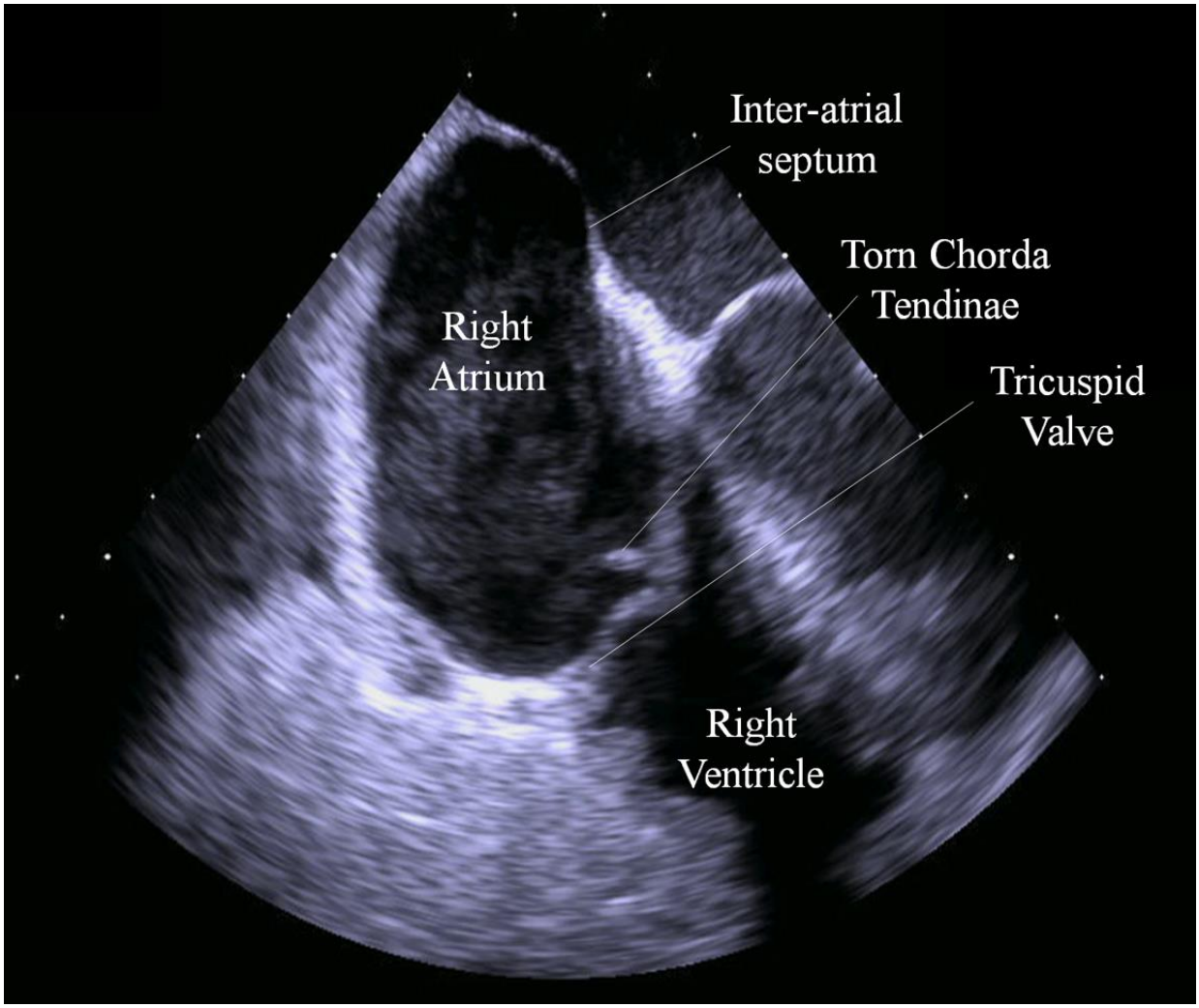


Figure 2 TOE showing torn tricuspid valve chorda tendinae



The patient was transferred to a tertiary centre in the United Kingdom for mechanical aortic, tissue pulmonary and tricuspid valve replacements. Intra-operatively, debridement of an area adjacent to the atrio-ventricular node took place. Implantation of a dual chamber pacemaker was performed in view of postoperative complete heart block.

After arrival back to Malta, following a short period of stability, recurrent infections of the sternotomy wound led to wound dehiscence, in turn leading to septic shock with disseminated intravascular coagulation and acute kidney injury which led to the patient's death.

Discussion

Incidence and Aetiology

Multivalvular IE accounts for approximately 15% of all IE cases.[4] The majority (70%) of multivalvular IE patients require surgical intervention,[5] with the most common indications being heart failure, uncontrolled infection despite antibiotic treatment, large and mobile vegetations, abscess formation and embolisation events. The main risk factors for multivalvular IE are IVDU (or chronic intravenous access), previous history of IE, history of invasive procedures, endocardial devices (such as pacemakers), congenital heart disease or pre-

existing valvular disease;[3] none of which were present in our patient's history.

Microbiology

Staphylococci spp., *Streptococci* spp., and *Enterococci* spp. are the causative agents in over 80% of all IE cases.[3] In our patient's case, *Streptococcus agalactiae* was the culprit organism. *S. agalactiae* is a Gram-positive coccus (Group B Streptococcus) which commonly affects neonates, pregnant patients and those with immunosuppression (cancer, patients on active chemotherapy, cirrhosis and also those with diabetes mellitus). IE is however not a common presentation of infection by this organism. In *S. agalactiae*-associated IE, there is a significant mortality and morbidity from complications, as well as an increased risk of septic embolization,[6] as was demonstrated in our patient. *S. agalactiae* endocarditis is associated with a mortality rate as high as 56%.[7]

CONCLUSION

As demonstrated by our case, multivalvular IE is associated with high morbidity and mortality, which tend to persist even after successful surgical valve replacement.

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