Infective endocarditis in obstructive hypertrophic cardiomyopathy: a case series and literature review

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To the Editor: Infective endocarditis (IE) is a rare complication of hypertrophic cardiomyopathy (HCM) that may lead to fatal outcomes if the infection is not effectively controlled. We report three cases of hypertrophic obstructive cardiomyopathy (HOCM) complicated with IE, two of which were successfully treated by mitral valve replacement (MVR) and septal myectomy (SM) due to lack of clinical response to antibiotics, worsening heart failure, and severe mitral regurgitation.

The first case was a 42-year-old woman presenting with low-grade fever, chest distress, shortness of breath, and worsening edema for 1 month. She had undergone cosmetic surgery (fat filling) 2 months prior. HOCM had been diagnosed for several years but she did not receive alcohol septal ablation or myomectomy due to the presence of multiple branches of the first septal artery and high surgical risk. So, she had been treated with an oral beta-blocker. A set of two blood cultures grew Gram-positive streptococci sensitive to linezolid, penicillin, ceftriaxone, and vancomycin on the third day after admission. Due to penicillin allergy, bacteremia was uncontrollable and complicated with IE. Subsequent echocardiography revealed severe mitral regurgitation with multiple patchy and echodense vegetations attaching to anterior and posterior mitral valve (MV) leaflet [Figure 1]. She underwent urgent MVR and SM due to worsening heart failure. Both the operation and postoperative pathology confirmed the formation of multiple vegetations in the MV. Her symptoms of heart failure were dramatically resolved after surgery and she was discharged after 25 days of parenteral treatment with amikacin and linezolid.

Our second case involved a 34-year-old woman complaining of worsening chest stuffiness, dyspnea on exertion, and low-grade fever for 10 days. She had been previously diagnosed with HOCM during a routine examination without receiving specific treatment. Echocardiography found multiple hypoechoic masses adherent to anterior and posterior MV leaflets, the largest of which was up to 2.0 cm × 1.3 cm in size. Blood cultures were sterile as she had already received short courses of antibiotics before admission. Albeit treated with empiric antibiotics, heart failure deteriorated, and the patient received MVR and SM. Abundant vegetations were seen in MV leaflets during surgery, leading to anterior MV leaflet perforation and severe mitral insufficiency. Fortunately, her symptoms were completely relieved after the operation and with improved observation, she was discharged.

The third case was an 86-year-old woman admitted for recurrent fever, chest stuffiness, and dyspnea on exertion for >1 month. She had symptoms of exertional dyspnea and chest discomfort for 10 years but was diagnosed as HOCM until 1 year ago. She received a dual-chamber pacemaker implanting for severe symptoms with regard to suboptimal candidates for septal reduction therapy but experienced recurrent episodes of pouch infection that led to surgical debridement and the eventual removal of the pacemaker. Before her admission, blood cultures were all negative. Echocardiography demonstrated mobile isoechoic vegetations stuck to the right ventricular pacing electrode. However, in view that no improvement of symptoms occurred after 2 weeks of medical treatments, and the patient's age was too old for surgery, the patient's family transferred her to a local hospital for palliative treatment.

Spirito *et al*[1] assessed the occurrence of IE in HOCM was 4.3% at 10 years and discerned an HCM subgroup with both obstruction and atrial dilatation prone to develop IE. Of the 640 IE patients in our hospital since 2009, only 3 (0.5%) were diagnosed as HCM. Consistent with the literature, these patients presented with both left outflow tract obstruction and atrial enlargement. However, recent studies of Dominguez *et al*[2] and Sims *et al*[3] showed a similar incidence of IE with or without obstruction in HCM. Nevertheless, the small sample size could be just a statistical outlier, limiting its universality. There is an urgent need for large retrospective and prospective studies

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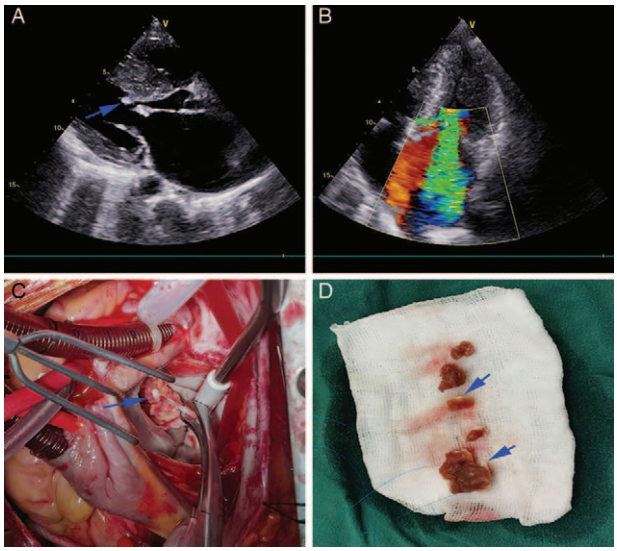

Figure 1: Two-dimensional echocardiography showed vegetation (arrow) on the anterior mitral leaflet (A). Doppler echocardiography demonstrated severe mitral regurgitation and markedly thickened interventricular septum in the mid-systolic phase (B). The mitral leaflet intraoperatively displayed multiple white vegetations (arrow) (C). Excised septal myocardium of the ventricular outflow tract was attached with white vegetations (arrow) (D).

to determine the true state of this population. Since intracardiac devices are increasingly implanted for HCM management in recent years, prophylactic antibiotic therapy should be taken into account for such patients at a high risk of bacteremia.

IE still carries high in-hospital mortality despite the diagnosis and treatment has been greatly improved.

Numerous patients failing to respond to antibiotics still need to accept surgery because of uncontrollable sepsis, severe valvular regurgitation, or even recurrent embolic complications. Given the extensive mitral involvement of IE in general and the varying technical levels at each center, MVR is regarded as a more reasonable option for patients with older age, more comorbidities, decompensated heart failure, or uncontrolled sepsis and in patients who receive combined surgery. As we knew, SM may furnish a more complete remission of outflow tract gradients for refractory HOCM, as compared with percutaneous transluminal septal myocardial ablation.[4] Although MVR and SM are exceedingly rare in most cases, the combined treatment is worthy of recommendation for IE patients with HOCM. Two of our patients who underwent MVR and SM both successfully gained relief of symptoms and improved functional class. A long-term study[5] had shown that SM and MVR are safe procedures for symptomatic improvement and low mortality in 1–5 years postoperatively. Besides, MVR alone was correlated with a poorer outcome with less symptomatic benefit.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patients have given their consent for their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Conflicts of interest

None.

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