CASE REPORT

A patient with mitral valve infective endocarditis with successful mitral valve repair having multiple septic embolizations at varying stages of treatment course

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INTRODUCTION

Infective endocarditis (IE) is a potentially life-threatening condition with varying clinical presentations. While fever with new onset murmur is the classical presentation, IE can also present with cardiac complications and/or embolic complications. On the other hand, these patients might develop complications due to septic embolization anytime during the treatment course, even after a successful surgical repair.

Mitral valve (MV) repair is recognized as a safe and effective surgical procedure in the recent years compared to the conventional MV replacement. Since the first reported successful MV repair for IE in 1990, literature shows that in patients undergoing surgery for IE, MV repair can be safely performed and is associated with better outcome in comparison with MV replacement.

Here we report a 32 year old female patient with a period of amenorrhoea of 25 weeks, who presented with fever and breathlessness, diagnosed to have mitral valve infective endocarditis (MVIE) with grade 4 mitral regurgitation (MR) and posterior mitral valve leaflet (PMVL) prolapse detected by transthoracic echocardiogram.

CASE REPORT

A 32-year-old previously healthy female patient presented with fever and breathlessness. After an initial assessment, she was diagnosed to have left side acute pyelonephritis based on urine culture and ultrasonic features. The patient was started on intravenous antibiotics. There was an incidental finding of a period of amenorrhoea of 25 weeks. with a positive urine Beta HCG test. An intrauterine single live foetus was confirmed ultrasonically. Despite the treatment with intravenous antibiotics, her febrile illness continued. A transthoracic echocardiogram (TTE) was performed, which revealed MV endocarditis with grade 4 mitral regurgitation and PMVL prolapse.

On the 14th day of admission, the patient developed an acute abdomen. Emergency laparotomy revealed a gangrenous gallbladder with biliary peritonitis. The gallbladder was removed, the foetus was delivered and died in the special care baby unit.

The patient was transferred to the cardiothoracic surgical unit due to uncontrolled sepsis despite antibiotics and the grade 4 MR with left ventricular failure. The patient was planned for MV repair. There were intraoperative findings of vegetations on PMVL with P2 prolapse due to chordal rupture. Complete vegetatectomy was done with excision of adequate margins. The PMVL was reconstructed with 5/0 polypropylene and the MV apparatus was reinforced with a MV ring.

The patient had an uncomplicated initial postoperative period. On postoperative day 21, she developed a generalized tonic clonic seizure. The contrast enhanced computed tomography brain revealed a cerebral abscess in the region of the right parietal lobe. A burr-hole aspiration was attempted, failing which she was offered with another 6 weeks of intravenous antibiotics. She was discharged home after completing the antibiotic course on post MV repair day 63. Currently, she is asymptomatic after 3 months of MV repair surgery.

DISCUSSION

About 35-50% of patients with IE have MV involvement[1]. The presentation may vary from patient to patient. Surgical treatment is needed in almost 50% of patients with IE, due to

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severe complications[2]. The indications for surgical intervention in MVIE are[3,4].

1. Significant MR with or without left ventricular failure.
2. Sepsis unresponsive to appropriate antibiotic therapy.
3. Presence of antibiotic resistant microorganisms.
4. Fungal endocarditis
5. Presence of an annular abscess, intracardiac fistula, and extension of an abscess at the intraventricular trigon.
6. New onset arrhythmia
7. Large vegetations (>1cm), especially the mobile ones on the anterior mitral valve leaflet (AMVL).
8. Repetitive septic embolization despite appropriate antibiotic therapy.

Cardiac failure, uncontrolled sepsis and prevention of embolism are the three main indications for surgery in MVIE. The case reported here had grade 4 mitral regurgitation, Left ventricular failure and uncontrolled sepsis despite intravenous antibiotic therapy with evidence of multiple septic embolization.

Surgical principles in treating MVIE are[6],

1. Excision of all infective tissue and vegetations
2. Restoration of damaged structures
3. Minimal use of foreign material

The vegetations of IE can be repaired as follows according to the surgical techniques described by A. Carpentier[6].

- The presence of vegetations on leaflets are treated by resection of the vegetation and affected part of the leaflet and repairing with an autologous pericardial patch.
- The ruptured chordae due to infection are replaced with PTFE artificial chordae.
- If the lesion involves the P2 scallop, a triangular resection is performed.
- The annular abscess is rare in IE and when it is present, the abscess is evacuated, and the annulus is replaced with a prosthesis which is challenging.

MV repair in native valve endocarditis is a class 1-B indication, according to the guidelines of the European Society of Thoracic Surgeons 2021. The transthoracic and trans-oesophageal echocardiographic evaluation of MV is essential to assess the feasibility of the valvuloplasty.

The principles for a successful MV reconstruction noted by Carpentier[5] are,

- The preservation/restoration of normal mobility of leaflets
- Creating a wide coaptation area
- Remodelling/stabilizing the annul2us.

In this case, the intraoperative findings were vegetations on PMVL with P2 prolapse. Triangular resection of P2 with complete vegetatectomy was done and the PMVL reconstructed. The MV annulus was reinforced with a MV ring. Post-valvuloplasty TOE confirmed a successful repair with satisfactory mobility of the leaflets and a good coaptation area.

The advantages of MV repair compared to replacement are,

- Low perioperative mortality and morbidity by preserving LV function in the case of valvuloplasty.
- Low recurrence of the infective process in the case MV repair. 95% of patients have no recurrence at 6 years.
- The disadvantages of lifelong warfarin therapy in the case of MV replacement

In the given case, at 3 months post-operatively, the patient remained asymptomatic and is on aspirin without having the burden to be on lifelong warfarin.

CONCLUSION

In terms of clinical outcome, reduced perioperative mortality and morbidity, MV repair is superior to MV replacement where surgical management is indicated in MVIE. The complications of MVIE may develop anytime during the pre-diagnostic and post-diagnostic period. The clinician should be vigilant about this aspect. Complications due to septic embolization can develop even after a successful surgical repair. Sensible clinical assessment and timely intervention with multimodal treatment approach may prevent detrimental outcomes.

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