

A case of infective endocarditis diagnosed by transesophageal but not transthoracic echocardiography

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To the editor: Infective endocarditis (IE) after mitral valve plasty is rare, and it has been reported that the incidence is less than 0.5% [1,2]. We report a case of mitral valve replacement for IE after mitral valve plasty diagnosed by transesophageal, but not transthoracic, echocardiography.

A 61-year-old woman underwent mitral valve plasty 2 years ago. She was admitted to hospital due to IE 3 weeks ago. Transthoracic echocardiography (TTE) and transesophageal echocardiography (TEE) 3 weeks ago revealed mobile vegetation on the anterior mitral leaflet and severe mitral regurgitation (MR). Her blood culture was positive for methicillin-resistant *Staphylococcus epidermidis* (MRSE). Inflammatory symptoms were not improved by a treatment with antibiotics for about 2 weeks, and TTE findings did not change. The patient was transferred to this hospital to undergo an operation.

Preoperative TTE in our hospital 3 days ago revealed moderate MR and paravalvular leakage. However, it did not clearly reveal mobile vegetation. At this time, the patient had two major criteria and three minor criteria according to the Duke Criteria for the Diagnosis of IE [3]. Therefore it was decided that surgical intervention for IE was necessary.

The operation was carried out under general anesthesia. After endotracheal intubation, TEE was performed, which revealed mobile vegetation on the anterior and posterior mitral leaflet, large perivalvular abscesses, severe MR, and paravalvular leakage.

There was thick vegetation on the entire surface of the mitral valve and Carpentier ring, large perivalvular abscesses, and a perforation on the anterior leaflet. There was also an inflammatory change in the mitral valve. The Carpentier ring was detached due to the infection. After as much as possible of the Carpentier ring, the mitral valve, and the infected tissue were removed, mitral valve replacement was performed. Subsequent TEE did not reveal MR or a paravalvular leakage.

The role of perioperative TEE is to diagnose IE after the induction of anesthesia, to identify any expansion of lesions, and to consider the operative method. Mitral valve replacement is performed when the infection is limited to a leaflet, and mitral valve plasty is performed when the infection is limited to a portion of a leaflet or mitral chordae. If a periannular extension of infection is present, drainage of the

abscess cavities, excision of necrotic tissue, and the closure of fistulous tracts are performed [4]. Aortic valve replacement is carried out if the abscesses spread through the aortic valve. In this case, even though preoperative TTE failed to reveal mobile vegetation, intraoperative TEE revealed mobile vegetation and perivalvular abscesses. Therefore, mitral valve replacement, drainage of abscess cavities, and excision of necrotic tissue were recommended.

Several studies have reported that TEE has a substantially higher sensitivity and specificity than TTE for detecting vegetation, perivalvular extensions of IE, and the presence of a myocardial abscess [5–7]. As prosthetic structures are strongly echogenic, they may prevent vegetation detection [8]. In a large series of prosthetic endocarditis, TEE has shown an 86%–94% sensitivity and an 88%–100% specificity for vegetation diagnosis, while TTE sensitivity was only 36%–69% [9].

TEE is a useful tool for the diagnosis of IE after mitral valve plasty and surgical decision making.

References

1. David TE, Omran A, Armstrong S, Sun Z, Ivanov J (1998) Long-term results of mitral valve repair for myxomatous disease with and without chordal replacement with expanded polytetrafluoroethylene sutures. *J Thorac Cardiovasc Surg* 115:1279–1286
2. Shin HJ, Lee YJ, Choo SJ, Song H, Chung CH, Lee JW (2005) Analysis of recurrent mitral regurgitation after mitral valve repair. *Asian Cardiovasc Thorac Ann* 13:261–266
3. Durack DT, Lukes AS, Bright DK (1994) New criteria for diagnosis of infective endocarditis: utilization of specific echocardiographic findings. *Duke Endocarditis Service. Am J Med* 96:200–209
4. Bayer AS, Bolger AF, Taubert KA, Wilson W, Steckelberg J, Karchmer AW, Levison M (1998) Diagnosis and management of infective endocarditis and its complications. *Circulation* 98:2936–2948
5. Horstkotte D, Follath F, Gutschik E, Lengyel M, Oto A, Pavie A, Soler-Soler J, Thiene G, Graevenitz AV (2004) Guidelines on prevention, diagnosis and treatment of infective endocarditis executive summary: the task force on infective endocarditis of the European Society of Cardiology. *Eur Heart J* 25:267–276
6. Shapiro SM, Young E, Guzman SD, Ward J, Chiu CY, Ginzton LE, Bayer AS (1994) Transesophageal echocardiography in diagnosis of infective endocarditis. *Chest* 105:377–382
7. Daniel WG, Mugge A, Martin RP, Lindert O, Hausmann D, Nonnast-Daniel B, Laas J, Lichtlen PR (1991) Improvement in the diagnosis of abscesses associated with endocarditis by transesophageal echocardiography. *N Engl J Med* 324:795–800
8. Evangelista A, Gonzalez-Alujas MT (2004) Echocardiography in infective endocarditis. *Heart* 90:614–617
9. Rozich JD, Edwards WD, Hanna RD (2003) Mechanical prosthetic valve-associated strands: pathologic correlates to transesophageal echocardiography. *J Am Soc Echocardiogr* 16:97–100

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