Giant Aortic Root Pseudoaneurysm Surrounding the Left Main Coronary Artery

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ABSTRACT
A 69-year-old patient underwent an urgent aortic valve replacement because of Streptococcus agalactiae endocarditis of his native aortic valve. Since a rapid progression of the former abscess cavity into an aortic root pseudoaneurysm with increasing paravalvular regurgitation during postoperative follow-up, reoperation was performed. In the preoperative transesophageal echocardiography (TEE) images the pseudoaneurysm completely surrounds the left coronary artery (LCA) without any signs of myocardial ischemia.

Keywords: Aortic root pseudoaneurysm, aortic valve replacement, infective endocarditis, left coronary artery, transoesophageal echocardiography

INTRODUCTION
A 69-year-old male patient with no history of cardiovascular disease underwent an urgent cardiac surgery because of Streptococcus agalactiae endocarditis of the native aortic valve complicated by severe aortic regurgitation with the left-sided heart failure. Preoperative transesophageal echocardiography (TEE) showed vegetation on the left coronary cusp (LCC) with abscess formation and a satellite lesion on the anterior mitral valve leaflet (aMVL). The aortic valve was replaced by a bioprosthesis (Carpentier-Edwards Perimount Magna Ease 25 mm (Edwards Lifesciences, Irvine, CA, USA)) after careful debridement of the left ventricular outflow tract (LVOT), the aMVL and the abscess. Postoperative TEE demonstrated acceptable mitral and aortic valvular function with only mild paravalvular regurgitation at the LCC. During recovery, the patient showed muscle weakness and decreased sensibility of his right arm, probably caused by septic emboli, since ischemic lesions in the caudate nucleus were visible on CT scan.

Postoperatively repeat TEE was performed at 12 days, which showed recurrence of the former abscess cavity at the LCC with connection to the LVOT; however, without any sign of re-infection clinically and favorable antibiotic response. We conducted a watchful waiting strategy. Unfortunately, TEE’s follow-up demonstrated a rapid progression of the extension of the former abscess cavity into a large pseudoaneurysm (approx. 4 cm × 4 cm × 2.5 cm) collapsing into the LVOT and subsequently paravalvular aortic regurgitation that increased severity. Therefore, a reoperation on the patient was performed at 40 days after primary surgery.
The TEE images displayed here were made preoperative just before the reoperation and show a giant aortic root pseudoaneurysm at the LCC. The pseudoaneurysm completely surrounds the left main coronary artery (LCA) without any signs of myocardial ischemia, despite the color flow Doppler shows the signs of squeezing of the LCA [Figures 1-4]. The aortic root was successfully reconstructed by closing the large cavity with a bovine pericardial patch and the valve prosthesis was replaced (Carpentier-Edwards Perimount Magna Ease 25 mm) [videos 1-5].

**DISCUSSION**

Infective endocarditis (IE) is a relatively rare disorder which is associated with high mortality and severe complications. The estimated incidence is 3-10 cases per 100,000 per year. Pseudoaneurysms are, together with abscess formation and fistulae, perivalvular extensions of IE. Complications like these are often associated with poor prognosis and high likelihood of the need for surgery. For imaging in IE echocardiography is the technique of choice. TEE has been demonstrated superior to transthoracic echocardiography (TTE) in the visualization of vegetations and subaortic complications like abscesses and (pseudo) aneurysms. TEE is also recommended in patients with a prosthetic valve.

In our patient abscess formation was seen on TEE before initial surgery. Postoperative echocardiography unfortunately showed recurrence of the formal abscess...
cavity which rapidly expanded into a pseudoaneurysm. Preoperative TEE images at reoperation showed a Doppler flow pattern with flow into the cavity during systole and back into the LVOT during diastole. This flow pattern is important in identifying a pseudoaneurysm.[3]

Echocardiography plays the main role in diagnosis and follow-up of IE. In specific cases TEE may be a superior technique to TTE. However, in any case TEE should be used liberally in combination with TTE in IE patients.

Declaration of patient consent
The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient(s) has/have given his/her/their consent for his/her/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.

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Conflicts of interest
There are no conflicts of interest.

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