

# Infective endocarditis occurs in both native aortic valve and patent ductus arteriosus

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## Abstract

A 45-year-old man presented with complaints of intermittent fever and chest pain for 3 weeks. He had a 30-year history of patent ductus arteriosus (PDA). Transthoracic- echocardiography (TTE) and transesophageal echocardiography (TEE) successfully diagnosed aortic vegetations and cast-type PDAs, but additional PDA terminal vegetations were found TEE, and PDA vegetations were also found in coronary CT. Multi model imaging has important value for its accurate diagnosis and treatment.

- 1.Hospital exempted from ethics review in view of retrospective cases.
- 2.The patient agreed to have her anonymized clinical data published in this report.
- 3.All authors have read and approved submission of the manuscript and have no conflict of interest to disclose.
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Infective endocarditis occurs in both native aortic valve and patent ductus arteriosus

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## Abstract

A 45-year-old man presented with complaints of intermittent fever and chest pain for 3 weeks. He had a 30-year history of patent ductus arteriosus (PDA). Transthoracic- echocardiography (TTE) and transesophageal echocardiography (TEE) successfully diagnosed aortic vegetations and cast-type PDAs, but additional PDA terminal vegetations were found TEE, and PDA vegetations were also found in coronary CT. Multi model imaging has important value for its accurate diagnosis and treatment.

## KEYWORDS

infective endocarditis, patent ductus arteriosus, transthoracic echocardiography, Transesophageal echocardiography, multi model imaging

A 45-year-old man presented with complaints of intermittent fever and chest pain for 3 weeks. He had a 30-year history of patent ductus arteriosus (PDA). Physical examination revealed a continuous systolic murmur at the second left intercostal space. Blood cultures suggested positive findings of *Streptococcus* spp. Clinical diagnosis of infective endocarditis (IE) based on modified Duke criteria.<sup>1</sup> Transthoracic echocardiography (TTE) showed a tubular PDA with a diameter of 0.7cm, and hyperechoic tissue attached to the native aortic valve (Panel A), moderate to severe aortic regurgitation. Transesophageal echocardiography (TEE) demonstrated a nodular hypoechoic tissue located on the aortic valve (Panel B, Videos S1–S2) and a tubular-type PDA with a cord-like structure located on the PA end of ductus (0.5cm) (Panel C, Videos S3). Cardiac computed tomography angiography confirmed a strip-like low density structure attached to the side of the PDA (Panel D). The patient underwent resection of vegetations on the aortic valve and PDA, ligation of PDA, aortic valve replacement. Postoperative pathology confirmed that this structure was vegetations (Panels E and F). The postoperative course was uneventful and discharged after 1 week.

Infectious endocarditis-related vegetations occur simultaneously both aortic valve and PDA is particularly rare, to our knowledge, it is easily underdiagnosed or misdiagnosed. Although TTE is the gold standard for diagnosis of infective endocarditis vegetations, there are still challenges in the diagnosis of unusual location sites and small vegetations. Multi model imaging has important value for its accurate diagnosis and treatment.<sup>2</sup>

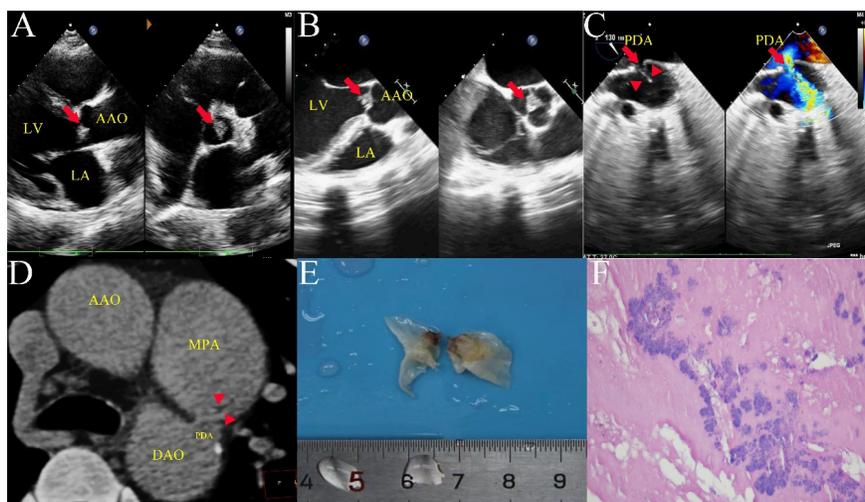


Figure 1.

Transthoracic echocardiography (Panel A), Transesophageal echocardiography (Panel B, C), Coronary computed tomography angiography (Panel D), Postoperative pathology (Panel E, F)

Transthoracic ultrasound and transesophageal discovery of aortic valve vegetations were successful (Panel A,B, red arrow). Transesophageal ultrasound additionally confirmed cord-like vegetations at the end of PDA (Panel C, red arrow and triangle). CCTA confirmed that small strips of vegetation adhered to the end of PDA (Panel D, triangle). Postoperative pathology (Panel E, F). AAO = aorta; LA = left atrium; LV = left ventricle; PDA = patent ductus arteriosus; MPA = main pulmonary artery

#### References:

Li J.S, Sexton D. J, Mick N, et al. Proposed modifications to the Duke criteria for the diagnosis of infective endocarditis. *Clin Infect Dis*. 2000; 30: 633-638.

Gomes A, Glaudemans AWJM, Touw DJ, et al. Diagnostic value of imaging in infective endocarditis: a systematic review. [J]. *Lancet Infect Dis*, 2017, 1:e1-e14.

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Video1.TEE short axis aortic valve vegetations.avi available at <https://authorea.com/users/490914/articles/610245-infective-endocarditis-occurs-in-both-native-aortic-valve-and-patent-ductus-arteriosus>

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Video3.TEE of PDA vegetations.avi available at <https://authorea.com/users/490914/articles/610245-infective-endocarditis-occurs-in-both-native-aortic-valve-and-patent-ductus-arteriosus>

