

Images in Cardiovascular Disease



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An Unusual Case of Aortic and Mitral Valve Involved *Erysipelothrix rhusiopathiae*-Induced Endocarditis: Rare Zoonosis with Devastating Outcome

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An 83-year-old male was admitted to a local hospital with suspicion of an abdominal infection. His past medical history included hypertension for which he took amlodipine 5 mg once daily. Otherwise, the patient was previously healthy and had no other diseases. The patient retired after serving as a public servant, and he had been unemployed for a long time at the time of hospitalization. One month prior to admission, the patient developed anorexia. Four days prior to admission, he developed left flank pain, fever and a chilling sense. On admission, his vital signs were stable, but a high fever was noted. His laboratory findings were notable for a white blood cell count of 9,090/mm³, anemia, thrombocytopenia, C-reactive protein count of 64.0 (0–4.9) mg/L, erythrocyte sedimentation rate count of 81 (0–15) mm/h. He underwent abdomen-pelvic computed tomography and preliminary splenic abscess was diagnosed. The abscess lesion was not mechanically drained because it had not capsuled, so he injected intravenous antibiotics (ceftriaxone). After 2 days, blood culture was reported as *Erysipelothrix rhusiopathiae* bacteremia in 2 sets. Susceptibility to penicillin G and ceftriaxone was confirmed and aortic valve systolic murmur was found. To rule out endocarditis, the patient underwent echocardiography, where vegetation was observed. He was referred to our hospital for further evaluation and treatment.

Upon hospital admission, transthoracic echocardiography (**Figure 1**) provided suspicion of mobile vegetation on the aortic valve (AoV) and mitral valve (MV). Severe mitral regurgitation (MR) and moderate aortic regurgitation (AR) were also present. Transesophageal echocardiography (**Figure 2**) confirmed the presence of vegetation on all leaves of the AoV and MV. Eccentric moderate AR was confirmed with multiple small perforations or leaflet continuity abnormalities (**Figure 3**). The flail motion was observed at MV with severe MR. There was no evidence of rupture in the sinus of Valsalva or the left ventricular outflow tract.

Septic emboli was diagnosed via brain magnetic resonance imaging. The patient complained of heart failure symptoms (New York Heart Association IV) and sustained fever. We planned the surgery for MV and AoV replacement.

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The authors have no financial conflicts of interest.

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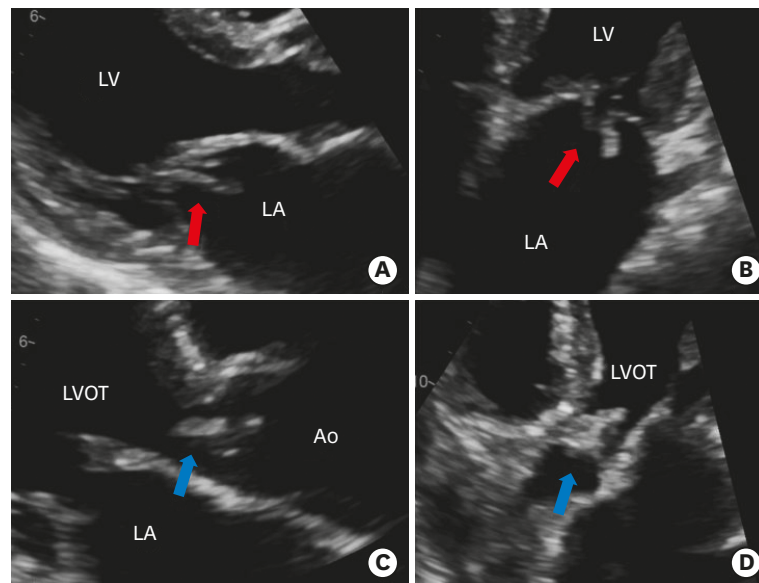


Figure 1. Transthoracic echocardiogram. (A) PLAX demonstrating moving masses (vegetation) on MV posterior and anterior leaflet. (B) Four chamber view of MV. (C) PLAX demonstrating moving masses (vegetation) on the AV. (D) Five chamber view of AV. Red arrow: echogenic mass at MV; Blue arrow: echogenic mass at AV. LV: left ventricle, LA: left atrium, LVOT: left ventricular outflow tract, Ao: aorta, PLAX: parasternal long-axis view, MV: mitral valve, AV: aortic valve.

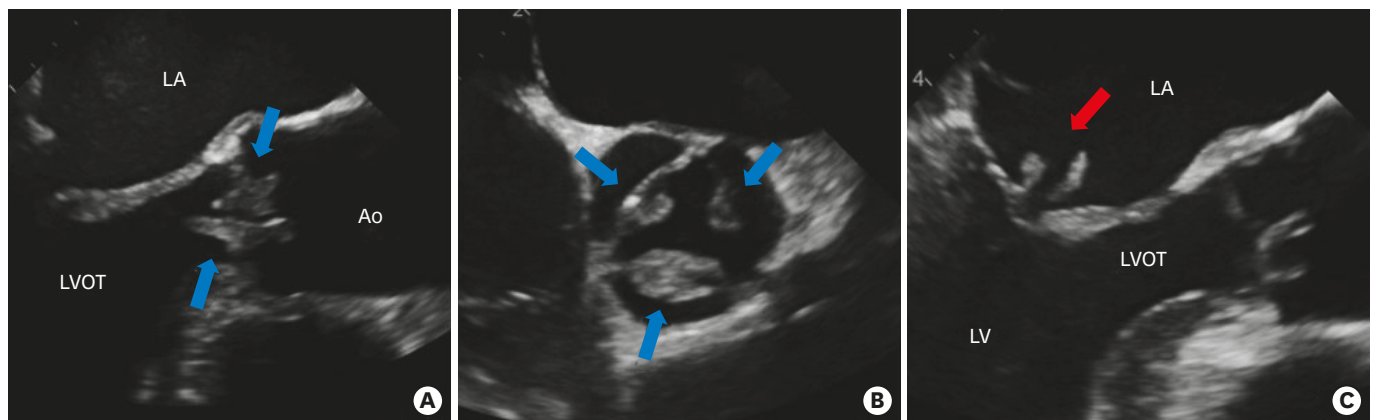


Figure 2. Transesophageal echocardiogram. (A) Midesophageal 170 degree view: AV. Vegetations were observed. (B) Midesophageal 70 degree view: AV. Vegetations were observed at NCC, RCC and LCC. (C) Midesophageal 150 degree view: MV. Vegetations were observed at MV posterior and anterior leaf. Red arrow: echogenic mass at MV; Blue arrow: echogenic mass at AV. LV: left ventricle, LA: left atrium, LVOT: left ventricular outflow tract, Ao: aorta, MV: mitral valve, AV: aortic valve, NCC: non-coronary cusp, RCC: right coronary cusp, LCC: left coronary cusp.

Intraoperatively, damaged AoV and MV were confirmed with signs of infection. The replacement was made using tissue valve, but rupture occurred at the LV outflow tract, which was weakened due to inflammation. The LV rupture site was repaired and extracorporeal membrane oxygenation was maintained. In the intensive care unit, medical treatments were continued; however, the patient died due to uncontrolled infection and septic shock.

E. rhusiopathiae induced endocarditis is very rare in humans. To date, only about 60 cases of *E. rhusiopathiae* induced endocarditis have been reported. In those cases, only 5 patients were confirmed surgically with invasion of the AoV.¹⁻³⁾ We describe a rare case of *E. rhusiopathiae*-



Figure 3. Transesophageal echocardiogram. (A,B) Midesophageal 150 degree view: The color doppler flow of AV. Sever eccentric AR was observed. AV tissue defect was shown at AR. The perforation of AV was suspected (yellow arrow). (C) Midesophageal 0 degree view: AV tissue defect was shown. The perforation of AV was suspected (yellow arrow).

LV: left ventricle, LA: left atrium, LVOT: left ventricular outflow tract, Ao: aorta, MV: mitral valve, AV: aortic valve.

induced endocarditis via echocardiography and surgery, involving both the AoV and MV. In previously reported cases and papers, *E. rhusiopathiae* induced endocarditis had an affinity for the AoV.^{2,3)} Other valves than the aortic valve have been found to be involved in rare cases.⁴⁾⁵⁾

E. rhusiopathiae is classified as a regular non-sporing gram-positive rod. This pathogen can spread in animals and humans from either direct inoculation of bacteria on the injured skin or previously contaminated injuries. Most infections in humans have occurred in fishers, farmers, butchers, and other occupations involving close exposure to animals.¹⁾ In humans, infection is categorized into three types: localized cutaneous infection (erysipeloid), severe generalized cutaneous infection, and septicemia.¹⁻³⁾

E. rhusiopathiae induced endocarditis has a high mortality, up to 38%.¹⁾ Therefore, medical and surgical treatment should be considered a patient's condition and the results of imaging diagnosis, including echocardiography. *E. rhusiopathiae* is very rarely reported, especially since the first case in 1986 in South Korea. Therefore, accurate blood culture and confirming the pathogen are necessary in patients suspected of endocarditis. This case highlights the importance of appropriate imaging for early detection of *E. rhusiopathiae* endocarditis to achieve favorable outcomes.

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