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THE FOUR CORNERS

CLINICAL VIGNETTE CORNER

Mitral Valve Endocarditis by *Micrococcus luteus*

First European Case

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ABSTRACT

CASE SUMMARY An 88-year-old woman with atrial fibrillation presented with worsening dyspnea after recent pneumonia and bronchitis. Echocardiography showed mobile vegetation on the mitral and aortic valves, severe mitral regurgitation, and mitral leaflet perforation. Blood cultures were negative, but the valve tissue grew *Micrococcus luteus*. She received empiric antibiotics and underwent successful replacement of the mitral valve with bioprosthesis and aortic valve shaving via endoscopic right minithoracotomy. Recovery was uneventful, and a 6-week antibiotic course was completed.

DISCUSSION This case illustrates *M luteus* as an emerging cause of infective endocarditis in susceptible patients and underscores the importance of early recognition and intervention to optimize outcomes.

TAKE-HOME MESSAGES Rare microorganisms such as *M luteus* can become opportunistic pathogens, which requires consideration of atypical infections in valve-related complications. Sampling and analyzing vegetation and affected tissues are essential to identify new opportunistic pathogens and develop targeted preventive strategies.

An 88-year-old woman was referred to our hospital for a 12-month history of worsening dyspnea. At the time of presentation, she had already been hospitalized in another peripheral hospital for a previous episode of bronchitis, during which our cardiologists were consulted after a routine echocardiogram that raised suspicion of endocarditis. Her medical history was substantially negative, except for a previous episode of atrial fibrillation still on the electrocardiogram. A chest radiograph revealed bilateral

TAKE-HOME MESSAGES

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- Sampling and analyzing vegetation and affected tissues are essential to identify new opportunistic pathogens and develop targeted preventive strategies.

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interstitial edema. Laboratory tests showed a higher than normal level of N-terminal pro-B-type natriuretic peptide (1,901 ng/L) and fibrinogen (715 mg/dL). Transthoracic and transesophageal echocardiography showed that the left atrium was markedly dilated (index volume: 74 mL/m^2). In the aortic valve, some mobile, hyperechogenic, filiform masses (the largest 10 × 7 mm) were visible. Another mass (20 × 12 mm) was visible in the posterior mitral leaflet (P1 region), which also had a perforation, plus severe mitral regurgitation (See **Figure** and Video 1). Empiric antibiotic therapy with ceftriaxone and vancomycin was started immediately.

The patient underwent cardiac surgery with mitral valve and aortic valve shaving in an endoscopic right minithoracotomy. Valve tissue was sent to the local microbiology laboratory, and the culture was positive for *Micrococcus luteus*. Ongoing antibiotic therapy continued for 6 weeks after surgery. Serum vancomycin levels were regularly tested to avoid toxicity. At 1 and 3 months after discharge, there were stable echocardiographic findings and significant improvement in symptoms. One year after discharge, a teleconsultation confirmed complete recovery.

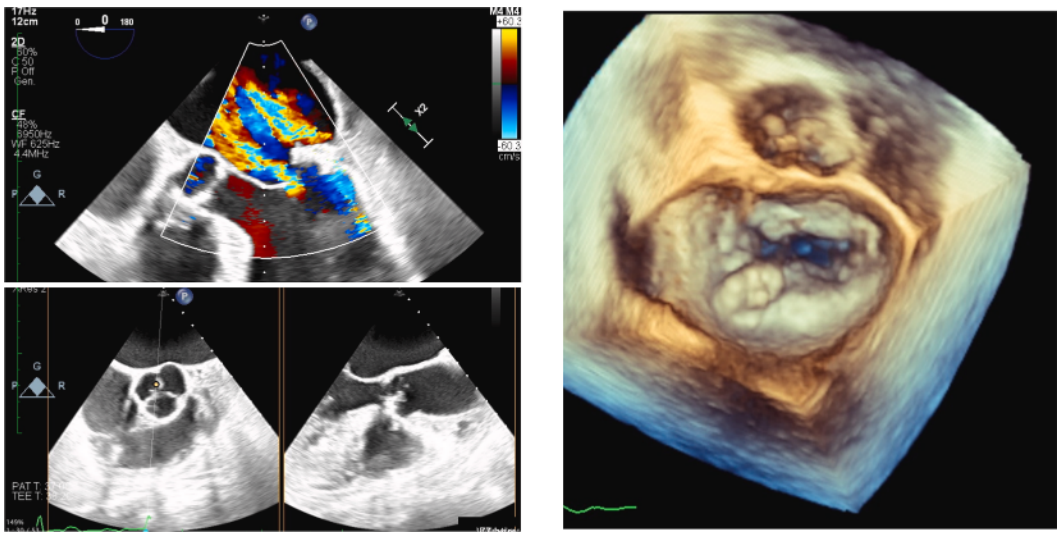
DISCUSSION

The first case of prosthetic valve endocarditis caused by *M luteus* was reported by Dürst et al in 1991.[1] However, the first report of *M luteus* infections involving native valve endocarditis was only documented in 2011, in the aortic valve.[2] In the United States, a unique case of mitral native valve endocarditis by *M luteus*[3] was reported; therefore, to our knowledge, this is the first such case reported in Europe.

Micrococcus species, belonging to the family Micrococcaceae, are Gram-positive cocci that are often considered contaminants and rarely cause infections. Despite its low virulence, this bacterium can colonize the surfaces of heart valves. Most of the previously reported cases were successfully treated with a combination of vancomycin and rifampin, although today there is no defined therapeutic regimen for native-vessel-infectious endocarditis of micrococcus species. *M luteus* is generally sensitive to penicillin, but in our case, penicillin was not the first choice given the patient's allergy to amoxicillin.

Within the other environmental potential causes, the increasing use of bioprosthetic medical devices has significantly altered the landscape of infectious endocarditis, leading to the detection of microorganisms that were previously considered nonpathogenic in cases involving valve vegetations. This shift is accompanied by changes in the inner environment and the overall microbiology of endocarditis. As a result, natural selection

FIGURE 1 Multimodality Echocardiographic Assessment of Valvular Pathology



(Top Left) Two-dimensional transthoracic echocardiography with color Doppler demonstrating turbulent flow across the affected valve. (Bottom Left) Transesophageal echocardiographic views showing abnormal valvular morphology. (Right) Three-dimensional echocardiographic reconstruction providing en face visualization of the valve, highlighting irregular leaflet architecture and lesion extent.

favors bacterial strains that can adapt to these new environments. In our case, *M luteus*, which is typically considered a harmless commensal in healthy individuals, emerged as an opportunistic pathogen, highlighting the evolving challenges in the management of infections associated with bioprosthetic devices.

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KEY WORDS endocarditis, mitral valve, valve replacement

APPENDIX For a supplemental video, please see the online version of this paper.