# Micrococcus Luteus: A Rare Pathogen Causes Prosthetic Valve Infective Endocarditis

Syed Naqvi, PGY2, Anup Patel, PGY2, Amanda McGeorge, MS4, Claire Ottman, MS3, Jibran Haider, PGY3, Tanya Shoaib, MD, Heather, Lusby D.O.

Med Center Health

Western Kentucky Heart & Lung Research Foundation & Educational Trust

## Introduction:

Infective endocarditis (IE) is most often caused by *staphylococci, streptococci*, or *enterococci* bacterial species. Immunocompromised patients, or those with prosthetic valves are at increased risk of Infective Endocarditis. Rarely, *Micrococcus* species can cause infective endocarditis. *Micrococcus* species are generally considered a contaminant in blood cultures; however, cases of micrococcus IE have been reported in severely immunocompromised patients. *Micrococcus luteus* has been reported to cause both native and prosthetic aortic valve IE. To our knowledge, 17 cases of *Micrococcus luteus* causing Infective Endocarditis has been described. Here we present a patient with end stage renal disease (ESRD) on hemodialysis (HD) found to have prosthetic valve infective endocarditis secondary to a rare pathogen, *Micrococcus luteus.*

## Case Report:

46-year-old male with a past medical history significant for mechanical mitral valve, chronic anticoagulation with warfarin, ESRD with arteriovenous fistula in the left arm, coronary artery disease, atrial flutter presented to the emergency room via EMS with chief complaint of shortness of breath and palpitations that came on suddenly and woke him up in the morning of admission. Prior to arrival, the patient was cardioverted by emergency personnel due to inability to get IV access. On the day of admission, the patient developed a fever of 100.2°F with a blood pressure of 83/49. Workup was initiated to identify an infectious source. Blood cultures were obtained that grew *Micrococcus luteus* in two bottles collected. Transthoracic echocardiogram (TTE) was negative for vegetation but due to high suspicion of IE transesophageal echocardiogram (TEE) was performed. TEE confirmed presence of vegetations, identifying a mobile echogenic mass measuring 0.4 x 0.4 cm on the anterior prosthetic mitral valve leaflet (Figures 1 and 2). The patient was started on a 4–6-week course of vancomycin per infectious disease. The patient's fever and hypotension resolved on day two. White blood cell counts were within normal limits throughout the patient's hospital course. Repeat blood cultures were obtained twice. Both repeat blood cultures were negative for bacterial growth.


(Figure 1)


(Figure 2)

## Discussion:

With regards to infective endocarditis in native or prosthetic valves, Class I recommendations from the American College of Cardiology/American Heart Association task force on practice guidelines include antibiotic therapy for patients at risk or with suspected endocarditis after two sets of blood cultures, evaluating these patients for the need and timing of surgery, with early surgery recommended for those patients with valve dysfunction contributing to heart failure, resistant organisms, heart block, abscess, or persistent infection, as well as patients with relapsing prosthetic valve endocarditis. Our patient was initiated on an antibiotic regimen of vancomycin based upon sensitivities following two sets of blood cultures that grew *Micrococcus luteus*. *Micrococcus* species are known to also have the capability to form biofilms with prosthetic material.[1] Rifampin was considered in addition to Vancomycin. Due to severe drug interactions, this was not added to patient's therapy. The patient responded favorably to Vancomycin as demonstrated by the resolution of patient's fever and improvement in hemodynamic status after initiation and is planned for 6 weeks from negative blood cultures.

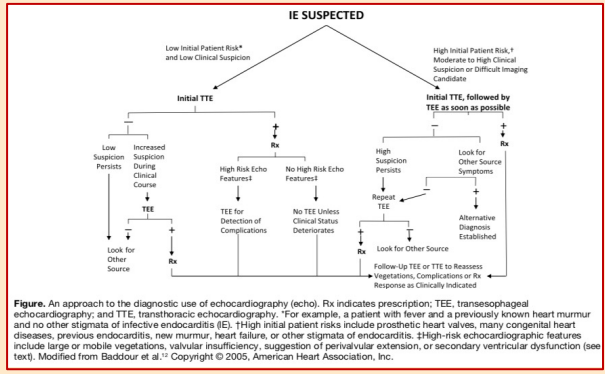


**Figure.** An approach to the diagnostic use of echocardiography (echo). Rx indicates prescription; TEE, transesophageal echocardiography; and TTE, transthoracic echocardiography. *For example, a patient with fever and a previously known heart murmur and no other stigmata of infective endocarditis (IE). †High initial patient risks include prosthetic heart valves, many congenital heart diseases, previous endocarditis, new murmur, heart failure, or other stigmata of endocarditis. ‡High-risk echocardiographic features include large or mobile vegetations, valvular insufficiency, suggestion of perivalvular extension, or secondary ventricular dysfunction (see text). Modified from Baddour et al.[12] Copyright © 2005, American Heart Association, Inc.

Figure 3 - Algorithm from American Heart Association demonstrating use of echo in suspected infective endocarditis[4]

## Conclusion:

Although *Micrococcus* is commonly considered a contaminant in blood cultures, it can be a cause of infective endocarditis. While Micrococcus has previously been demonstrated to occur in severely immunocompromised patients in a native aortic valve, this case report highlights IE occurring in an ESRD patient with a prosthetic mitral valve.

References:

[1] Nicole M. Ianniello, Diana C. Andrade, Stipe Ivancic, Paula A. Eckardt, Juan C. Lemos Ramirez, Native valve infective endocarditis due to Micrococcus luteus in a non-Hodgkin's lymphoma patient, IDCases, Volume 18, 2019, e00657