

Rhodococcus erythropolis prosthetic valve infective endocarditis: case report

Abstract

We present a case of a 71 year-old woman with a late prosthetic valve infective endocarditis with negative blood cultures. The cultures of tissue were taken during valve replacement surgery. Molecular identification of the culture obtained from the cardiac valve was confirmed by PCR amplification. The sequences showed identity with the 16S rRNA gene sequences of *Rhodococcus erythropolis*. After surgery, she completed 6 weeks of levofloxacin and clarithromycin and was transferred to a rehabilitation facility. To our knowledge this is the first case of non-*equi* infective endocarditis of a prosthetic valve in an apparently normal host. Also it highlights the importance of molecular studies in the diagnosis of IE with negative blood cultures.

Keywords: endocarditis, rhodococcus, prosthetic valve, PCR

Volume 9 Issue 3 - 2021

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Received: April 29, 2021 | **Published:** June 07, 2021

Case report

The genus *Rhodococcus* include more than a dozen species of Gram-positive cocobacillus that rarely cause infections in humans.¹ Among these the one that is best described is *Rhodococcus equi*. We present a case of a 71 year-old woman with a history of mechanical mitral valve replacement in 2008 as a complication of infective endocarditis. She presented herself to the emergency department in August 2020 with dyspnea, asthenia, and malaise that had begun two days prior. On admission, physical examination showed confusion and somnolence. Blood pressure was 150/90mmHg, pulse rate 90bpm, respiratory rate 24rpm, body temperature 36.5°C and oxygen saturation 93% on room air and 99% with a non-rebreather oxygen mask. Lung auscultation showed diminished breathing sounds in bases. Cardiovascular examination revealed peripheral edema and a click sound during auscultation, consistent with patient's history. While receiving diuretic treatment she rapidly deteriorated needing mechanical ventilation and aggressive supportive care.

Septic shock was suspected, peripheral blood cultures as well as urine culture were taken and immediate broad-spectrum antibiotic therapy with levofloxacin was initiated, suspecting respiratory focus. Laboratory results: Hematocrit 46%, WBC 22.500/uL (with normal formula), platelets count 384000/uL, creatinine 0.9mg/dL, urea 47mg/dL, total bilirubin 0.7mg/dL, indirect bilirubin 0,2mg/dL, AST 37 UI/L, ALT 45 UI/L, Na 134mEq/L, K 3,9mEq/L. Negative HIV test. Negative SARS-CoV-2 infection was confirmed by PCR on nasopharyngeal swab.

Urinalysis was normal. Blood cultures were negative. Gastrointestinal tract surveillance cultures were negative.

Brain CT was performed with no pathological findings. Thorax CT showed bilateral pleural effusion with passive atelectasis. Transesophageal echocardiogram done on day 4 of hospitalization revealed vegetations in prosthetic valve and paravalvular leak at 9, 3 and 6 o'clock position, constituting a moderate regurgitation. At this point, infective endocarditis was probable and antibiotics were changed to ceftriaxone and daptomycin. Further exams were carried

out in search for septic emboli or aneurysms, including thorax and brain CT angiography and contrasted abdomen CT with no positive results.

Together with the rest of the Endocarditis Team, surgery was indicated and 9 days after admission she successfully underwent biological valve replacement. Blood cultures and cultures of tissue taken during surgery did not grow any bacteria. Molecular identification from the cardiac valve was attempted by PCR amplification and sequencing analyses of a 607bp region of the 16S rRNA gene using universal primers. Sanger Sequencing was conducted in ABI 3500 genetic analyser (Applied Biosystems). Sequences were analysed by using the databases NCBI BLAST and Ribosomal Database Project. The sequences showed identity with the 16S rRNA gene sequences of *Rhodococcus erythropolis*. Antibiotic therapy was modified to levofloxacin, clarithromycin and daptomycin.

The patient's post-operative course was complicated by new onset sustained monomorphic ventricular tachycardia, which required immediate cardioversion, and hydropneumothorax that was solved with chest tube drainage. During recovery she completed 6 weeks of levofloxacin and clarithromycin and was transferred to a rehabilitation facility.

Rhodococcus erythropolis is typically found in soil and not considered a part of human flora. The significance of its isolation in non-sterile human body sites (except the eyes) are unclear² and there are only a few reports of invasive infection in immunocompromised patients.^{3,4} To our knowledge this is the first case of non-*equi* prosthetic valve infective endocarditis in an apparently normal host. Also it highlights the importance of molecular studies in the diagnosis of IE with negative blood cultures.

Acknowledgments

None.

Conflicts of interest

Authors declare that there is no conflict of interest.

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