Case Report

*Edwardsiella tarda* Endocarditis Confirmed by Indium-111 White Blood Cell Scan: An Unusual Pathogen and Diagnostic Modality

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*Edwardsiella tarda* is a freshwater marine member of the family Enterobacteriaceae which often colonizes fish, lizards, snakes, and turtles but is an infrequent human pathogen. Indium-111-\(^{111}\)In- labeled white blood cell (WBC) scintigraphy is an imaging modality which has a wide range of reported sensitivity and specificity (from 60 to 100% and from 68 to 92%, resp.) for diagnosing acute and chronic infection. We describe a case of suspected *E. tarda* prosthetic aortic valve and mitral valve endocarditis with probable vegetations and new mitral regurgitation on transthoracic and transesophageal echocardiograms which was supported with the use of \(^{111}\)In-labeled WBC scintigraphy.

1. Case Presentation

A 68-year-old Caucasian male with prior mechanical prosthetic aortic valve implantation in 1995, mitral valve annuloplasty in 2010, and rate-controlled atrial fibrillation presented to an outside facility with a chief complaint of fatigue and body aches. Upon admission, he was febrile (38.2°C) and had a normal white blood cell count with a significant left shift (27% bands) as well as an elevated procalcitonin (38.63 ng/mL). He was previously very active, exercising for three hours, three to four times weekly; however, he had been feeling ill with fatigue and body aches for two days and spent the day prior to presentation lying on a hard ice pack, developing a sacral decubitus ulcer. Initial workup and management of his sepsis focused on the ulcer as a source. Therefore, blood cultures were drawn and he was started on broad-spectrum antibiotics, including vancomycin, piperacillin/tazobactam, and ciprofloxacin.

On day two of his hospital stay, 2/2 blood cultures drawn 10 hours apart grew *Edwardsiella tarda* which was sensitive to all antibiotics tested allowing refinement of the antibiotic regimen to ceftriaxone and levofloxacin. The patient was questioned about possible freshwater marine exposure, and he admitted to having a deep puncture wound in his hand with a used fish hook about two weeks prior to presentation.

The following five hospital days were complicated by a waxing and waning encephalopathy despite defervescence, sterile follow-up blood cultures, and normalization of the left shift on complete blood count differential. On hospital day number 7, his atrial fibrillation was poorly rate controlled so cardiology was consulted. A transthoracic echocardiogram was performed, which showed an echodensity on the mechanical aortic valve, concerning for vegetation. With this finding, his family requested his transfer to our facility.

Upon arrival to our facility, levofloxacin and ceftriaxone were continued and a transesophageal echocardiogram was performed. The prosthetic aortic valve appeared to be well seated. The aortic valve leaflets were poorly visualized, but the previously repaired mitral valve demonstrated new moderate regurgitation and a vegetation on the anterior leaflet. With this rather confusing clinical picture of possible multivalve endocarditis, infectious disease and cardiothoracic surgery were consulted. Ultimately, upon discussion with the patient and consultants, the decision was made to obtain more information with an Indium-\(^{111}\)In- labeled white blood cell (WBC) scan. This scan was chosen due to availability at
With one major and three minor criteria, we felt comfortable blood cultures not meeting the definition of major criteria [8]. However, the patient, a highly educated businessman, wanted further evidence before he was willing to accept lifelong suppressive antibiotics.

In-labeled WBC scintigraphy for evaluation of endocarditis receives a rating of 3 for the American College of Radiology Appropriateness Criteria, which means it is rarely appropriate. The guidelines also state that there are situations where this imaging modality can be useful in isolated patients [9]. Other modalities such as 18F-FDG PET/CT and 99 mTc-Technetium-HMPAO-labeled leukocyte SPECT/CT have also been shown as effective imaging options for prosthetic valve endocarditis, but both were unavailable at our facility at the time [10, 11].

Our patient’s anatomy provided poor windows for echocardiographic examination and although he met Duke criteria to diagnose endocarditis the patient was unwilling to accept lifelong suppressive antibiotics without further information. Because of this, additional imaging obtained with In-labeled WBC scintigraphy was indispensable for helping the patient understand and accept his treatment. Although retrospective case reviews have suggested that In-labeled WBC scans may be useful for patient care less than half the time they are ordered, when ordered in a targeted manner, such as this case, they can be very valuable [12].

Conflict of Interests

The authors declare that there is no conflict of interests.

References


