

## CLINICAL VIGNETTE

# All that glitters is not gold: positron emission tomography/computed tomography detection failure in a patient with implanted pacemaker and relapsing *Corynebacterium striatum* sepsis

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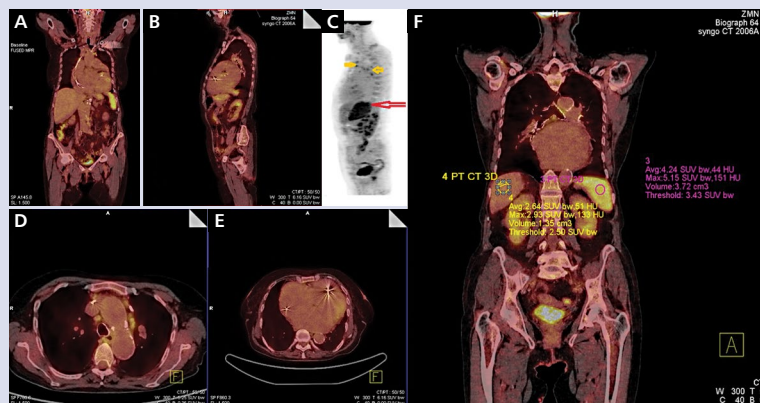
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Over the last several years the number of implanted cardiac electronic devices has increased. This fact has been accompanied by a higher prevalence of cardiac device-related infective endocarditis (CDRIE), which is usually diagnosed with the use of echocardiography. However, in echocardiographically negative cases with a high index of suspicion for CRDIE the fluorodeoxyglucose labelled with fluorine-18 (18F-FDG) positron emission tomography (PET) coregistered with computed tomography (CT) appears to be a useful technique for further evaluation [1]. We present a very rare case of a patient with implanted pacemaker with recurring *Corynebacterium striatum* bacteraemia and negative advanced imaging tests. A 79-year-old white woman seven years after pacemaker implantation was admitted to the Department of Cardiology due to two-day history of fever, dizziness, and progressive weakness. Laboratory tests revealed elevated serum levels of C-reactive protein (up to 114 mg/L), procalcitonin (up to 1.64 ng/mL) and mildly elevated white blood cell count ( $12.5 \times 10^3/\mu\text{L}$ ). Because of three episodes of *C. striatum* sepsis of unknown origin within the preceding six months, the empiric followed by antibiogram-guided treatment with vancomycin and gentamycin IV was implemented. Three blood cultures yielded *C. striatum*. Transthoracic (TTE) and transoesophageal (TEE) echocardiography as well as chest X-ray findings were normal. Abdominal ultrasound also revealed no abnormalities. Pacemaker interrogation showed increased pacing threshold of the ventricular lead. Because of the strong suspicion of CRDIE, PET/CT fusion imaging was performed on a BIOGRAPH 64 (Siemens, Munich, Germany) PET/CT scanner (Fig. 1). The examination was conducted after overnight fasting. PET/CT showed metabolically activated enlarged mediastinal nodes and pathological glucose spleen uptake, but no pathological 18F-FDG uptake in the heart. Despite negative results of the imaging tests, due to a high probability of CRDIE we decided to continue antibiotic therapy. Control laboratory tests revealed normal serum levels of inflammatory markers. Due to pacemaker dysfunction, percutaneous device extraction was performed. Postprocedural blood and urine cultures were negative, but the lead culture grew *C. striatum*. Monotherapy with vancomycin was continued for a subsequent four to six weeks. Because there was no strong indication for device reimplantation, the procedure was delayed. The patient remained in good clinical condition and was discharged home. *Corynebacterium*



**Figure 1.** Positron emission tomography/computed tomography (PET/CT) examination with the use of fluorodeoxyglucose labelled with fluorine-18 (18F-FDG); **A, B.** Coronal and sagittal fused multiplanar reconstruction (MPR) views showing no pathological tracer uptake in the heart area and along the wires; **C.** PET maximum intensity projection view. Yellow arrows show metabolically activated enlarged mediastinal lymph nodes. Red arrow shows pathological glucose spleen uptake due to inflammation. **D, E.** Transversal fused MPR views: enlarged heart without pathological 18F-FDG uptake, multiple mediastinal lymph nodes with mildly increased FDG uptake; **F.** Coronal fused MPR view: comparison of normal liver glucose uptake and increased spleen glucose uptake

*stratum* is a gram-positive, multidrug-resistant bacterium, mostly nosocomial, causing major infections, and it is associated with the presence of implantable materials [2]. The patient reported here had been hospitalised three times within the preceding six months due to *Corynebacterium striatum* sepsis; however, imaging tests such as TTE, TEE, or even PET/CT were unable to detect the origin of infection. False negative result of 18F-FDG PET/CT might be associated with the low spatial resolution of this modality, especially when intracardiac leads are evaluated. Antibiotic therapy may also affect the sensitivity of diagnostic imaging. 18-FDG PET/CT is a useful imaging tool in the detection and localisation of infection, but its reliability in CRDIE diagnosis is limited, which should be taken into account when device removal is considered.

## References

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**Conflict of interest:** none declared

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