

**SPOTLIGHT**

# A false alarm: Pacemaker pocket pseudo-infection

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**Keywords:** cardiac implantable electronic device, cellulitis, infection, pacemaker

A 87-year-old man had a dual-chamber pacemaker for almost 10 years implanted for symptomatic sinus node disease. Subsequently, he underwent device replacement in our department because of battery depletion. Nineteen months after the last procedure, he presented to a district hospital because he noticed a diffuse redness over the pacemaker area. Shortly after, he was transferred to our center with a presumed diagnosis of “pacemaker pocket infection.” On inspection, there was an obvious redness over the pacemaker pocket area extending to half of the left hemithorax (Figure 1 Panel A). The erythema was warm on palpation but there was no tenderness. Of note, the patient was afebrile in good clinical condition. His past medical history was significant for hypertension and hyperlipidemia treated with perindopril, amlodipine, and atorvastatin. The laboratory examinations were all within normal limits, apart from the C-reactive protein (CRP) levels (initial value: 90 mg/L; normal value <8 mg/L). No specific site of injury, irritation, insect bite, or sting was evident over the pacemaker area. Given that a pacemaker pocket infection was suspected, he was placed on intravenous antibiotic treatment with ampicillin/sulbactam and clindamycin while an extraction procedure was scheduled. A transesophageal echocardiogram the following day did not reveal any abnormality. The blood cultures taken before the antibiotics institution were negative. Remarkably, the patient responded

dramatically to the treatment and on the fifth day of hospitalization, the erythema disappeared (Figure 1B) while the CRP levels almost normalized (10 mg/L). Although the initial working diagnosis was a pocket infection, the possibility of a superficial infection caused by an involuntary irritation or minor injury was also considered. The patient was discharged home on the 8th day after admission and continued the same antibiotic treatment orally for another 7 days. During follow-up at 1, 6, and 12 months, the patient remained well without any relapse. The final diagnosis made by our team was local cellulitis that responded to antibiotic treatment and was confirmed by an internist with a special interest in infectious diseases.

Cardiac implantable electronic device (CIED) infection represents a devastating complication leading to significant morbidity and mortality.<sup>1,2</sup> Current recommendations advocate a therapeutic approach consisting of complete removal of the system and antimicrobial therapy.<sup>2</sup> Although most CIED infections occur within 1 year from the index procedure, a significant proportion of patients develop infections later.<sup>1,3</sup> The early recognition and management of CIED infections is important in terms of morbidity and mortality. The clinical presentation of our patient along with the elevated CRP was suspected of pocket infection, although 19 months had been elapsed since the generator replacement.



**FIGURE 1** (A) The erythema over the pacemaker area. (B) The appearance of the pacemaker area on the fifth day of hospitalization

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Notably, we have reported a case series of patients with skin lesions that mimic pocket infection.<sup>4</sup> These conditions include local cellulitis after CIED implantation, spontaneous bruising, herpes zoster, contact dermatitis because of the prolonged postoperative application of povidone-iodine.<sup>4</sup> However, most conditions that may be misinterpreted as CIED pocket infection are neoplastic (malignant tumors).<sup>4</sup> Moreover, titanium, nickel, or other pacemaker compounds may very rarely provoke allergic reactions including contact dermatitis.<sup>4</sup> Our patient suffered localized diffuse cellulitis without any obvious cause (local injury, sting, or bite). Clinicians should be aware of conditions mimicking CIED pocket infection. Many of these entities can be treated conservatively without any meaningful complications. Inadvertent CIED extraction may have a negative impact on patient's clinical outcomes. Although CIED pseudo-infection is rare, a rapid and dramatic improvement of the local inflammatory signs after antibiotic treatment during the first few days may portend a benign outcome. However, the diagnosis of pseudo-infection would be certain only if complete remission will remain and no signs of infection recur after cessation of antibiotic treatment.


#### CONFLICT OF INTEREST

Authors declare no conflict of interests for this article.

#### PATIENT CONSENT STATEMENT

The patient has given signed consent for publication of his medical case anonymously and without showing his face.

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**How to cite this article:** Sfairopoulos D, Konstantinou CS, Korantzopoulos P. A false alarm: Pacemaker pocket pseudo-infection. *J Arrhythmia*. 2022;38:486–487. <https://doi.org/10.1002/joa3.12695>