CLINICAL VIGNETTE

Local infection associated with a nonfunctional lead in a patient with a VVI pacemaker: beyond the standard of care

Andrzej Ząbek[1], Krzysztof Boczar[1], Paweł T. Matusik[1,2], Mateusz Ulman[1], Jacek Lelakowski[1,2], Barbara Małecka[1,2]

1 Department of Electrocardiology, John Paul II Hospital, Kraków, Poland
2 Institute of Cardiology, Jagiellonian University Medical College, Kraków, Poland

An 86-year-old woman with a VVI pacemaker (Siemens Elema LES 160 lead; Abbott, Abbott Park, Illinois, United States) implanted in the left pectoral region 36 years earlier was admitted to the hospital because of signs of local infection associated with a nonfunctional lead. Eleven years after the implantation, the pacemaker was removed due to local infection, while the nonfunctional lead was abandoned and a new VVI pacing system was implanted in the right pectoral region.

In the subsequent years, 2 planned pacemaker changes were performed.

Eleven months after the last hospitalization, a skin fistula in the left axillary fossa penetrating to the abandoned lead was observed (FIGURE 1A). The medical history did not reveal fever, subfebrile temperature, or pulmonary infection. Numerous colonies of methicillin-resistant *Staphylococcus aureus* were identified with a swab test at the fistula site, while serial blood cultures were sterile. The C-reactive protein level was slightly elevated (7.0 mg/l [reference range <5.0 mg/l]). However, the procalcitonin level and white blood cell count were normal. Transthoracic echocardiography (TTE) showed no signs of vegetation in the heart cavities. The extent of infection was assessed by single-photon emission computed tomography – computed tomography (SPECT-CT) using ^{99m}Tc-HMPAO-labeled leukocytes. No abnormal tracer uptake was shown in the course of the leads, cardiac cavities, or lungs. The tracer uptake was observed in the area of the proximal end of the abandoned lead, which corresponded to the inflammatory process (FIGURE 1B).

Based on the above findings, a local infection of the soft tissues of the axillary fossa, near the proximal end of the abandoned lead, in a pacemaker-dependent patient was diagnosed. The patient was scheduled for transvenous lead extraction of the abandoned lead with surgical treatment of the fistula in the axillary fossa, leaving the pacing system on the right side of the chest. First, the edges of the fistula were removed within the limits of healthy tissues. The nonfunctional 36-year-old lead was completely removed using the fistula access, by dissecting the lead from the growths in the vessels and heart cavities, using Byrd Dilator Sheath Set with an inner diameter of the inner sheath of 10F (Cook Medical, Bloomington, Indiana, United States) (FIGURE 1C). The fistula was sutured and drainage was applied, which was removed after 4 days. Targeted antibiotic therapy was administered for 2 weeks. During the 28-month follow-up, the patient remained in a stable condition. She reported no subfebrile temperature, and neither local nor systemic infection was noted. The levels of inflammatory markers were normal, control TTE showed no vegetation in the heart cavities, and there were no evident signs of inflammation in the axillary fossa (FIGURE 1D).

In a pacemaker-dependent patient with pacemaker infection, the standard of care involves lead extraction and pacemaker removal combined with antibiotic therapy and simultaneous implantation of the epicardial pacing system or the use of a temporary pacing system.[1,2] In our case, inflammatory markers were within the reference range, which is useful in determination of local infection.[3] Nonetheless, we decided to confirm the diagnosis with SPECT-CT.[4] Considering all the findings, the minor

Correspondence to:
Andrzej Ząbek, MD, PhD, MSc, Department of Electrocardiology, John Paul II Hospital, ul. Prądnicka 80, 31-202 Kraków, Poland, phone: +48 12 614 22 77, email: andrzej_j_z@poczta.onet.pl
Received: October 16, 2019.
Revision accepted: October 31, 2019.
Published online: October 31, 2019.
Kardiol Pol. 2020; 78 (1): 78-79
doi:10.33963/KP.15044

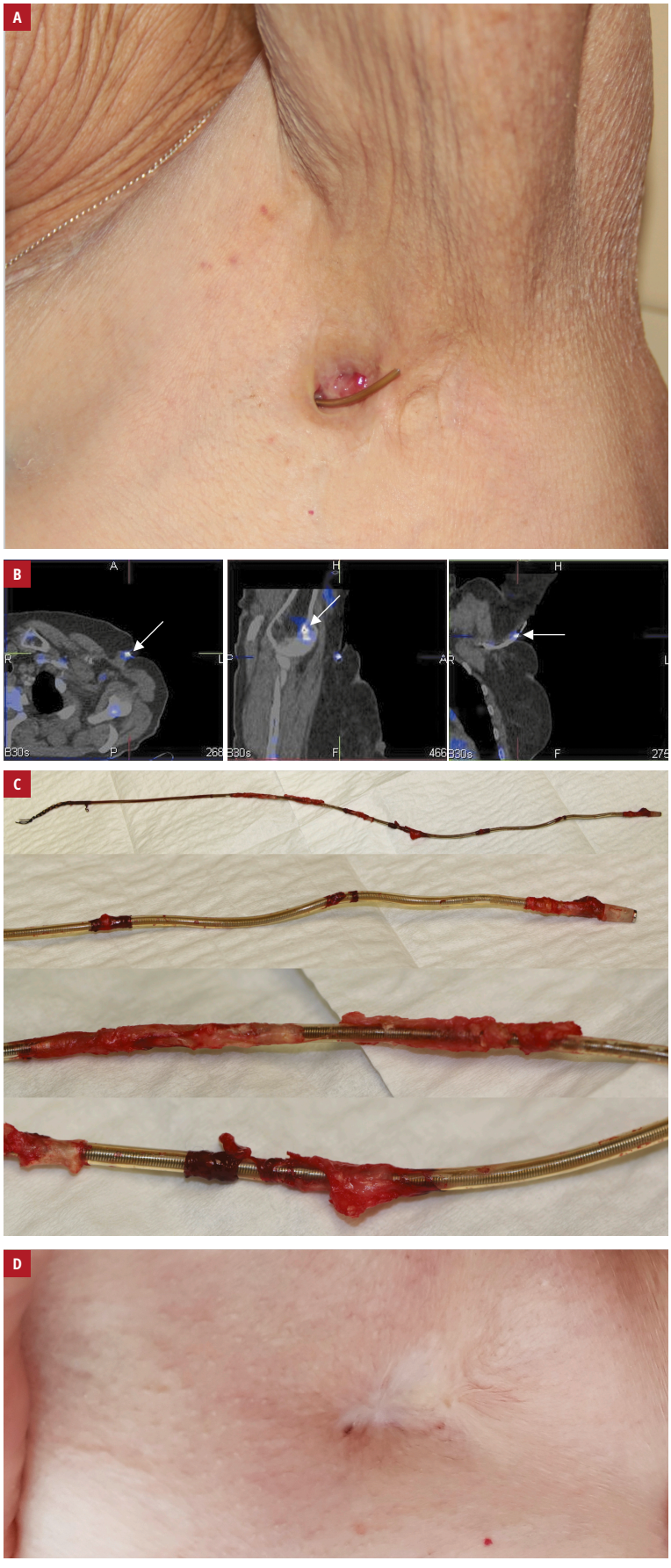

FIGURE 1 **A** – a skin fistula in the left axillary fossa with the abandoned lead; **B** – single-photon emission computed tomography – computed tomography with ^{99m}Tc-HMPAO-labeled leukocytes indicating limited local inflammation (arrows); **C** – extracted nonfunctional 36-year-old ventricular lead; **D** – left axillary fossa in the long-term follow-up

risk of infection recurrence, and the high risk of performing the full procedure, we decided to apply a nonstandard treatment by leaving the functional pacing system on the right side of the chest, which was not affected by the inflammatory process. The uneventful follow-up confirmed this to be the appropriate therapeutic decision.

ARTICLE INFORMATION

CONFLICT OF INTEREST None declared.

HOW TO CITE Ząbek A, Boczar K, Matusik PT, et al. Local infection associated with a nonfunctional lead in a patient with a VVI pacemaker: beyond the standard of care. Kardiol Pol. 2020; 78: 78-79. doi:10.33963/KP.15044

REFERENCES

1 Kusumoto FM, Schoenfeld MH, Wilkoff BL, et al. 2017 HRS expert consensus statement on cardiovascular implantable electronic device lead management and extraction. Heart Rhythm. 2017; 14: e503-e551.

2 Maciąg A, Syska P, Oręziak A, et al. Long-term temporary pacing with an active fixation lead. Kardiol Pol. 2015; 73: 1304-1309.

3 Ząbek A, Ulman M, Holcman K, et al. Inflammatory markers in the diagnostic workup of pacemaker- and defibrillator-related infections in patients referred for transvenous lead extraction. Kardiol Pol. 2019; 77: 918-925.

4 Małecka BA, Ząbek A, Dębski M, et al. The usefulness of SPECT-CT with radioisotope-labeled leukocytes in diagnosing lead-dependent infective endocarditis. Adv Clin Exp Med. 2019; 28: 113-119.