Learning Point for Clinicians

Pacemaker infections are treated by device extraction that may not be complete. Pacing lead remnants rarely cause persistent infection and are detected on imaging. Despite high procedural success, cardiac device related infective endocarditis should be considered after device extraction in patients presenting with sepsis, even in the presence of normal imaging.

Case report

Recurrent sepsis post-cardiac device removal

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An 80-year-old gentleman underwent extraction of a left-sided 7-year-old permanent pacemaker for endocarditis and sepsis following a recent box change. A new device was implanted on the right side a few weeks later. However, infection recurred, and he underwent a second device extraction within 6 months of the first procedure. No further devices were implanted at this stage as the patient was haemodynamically stable despite being septic. The previous pacemaker site was not infected, there were no peripheral stigmata of endocarditis, and the systemic examination was essentially normal.

Other medical history included hypertension, angina, hypercholesterolemia and diverticulosis. Inflammatory markers were raised on blood test, and blood cultures grew methicillin-resistant *S. aureus* (MRSA); urine and sputum cultures were negative. ECG showed a slow junctional rhythm at 50 bpm with no clear p waves and partial right bundle branch morphology in the anterior leads; lung fields were clear on chest radiography. No obvious source of infection was identified on CT chest and abdomen. Trans-thoracic and trans-oesophageal echocardiograms were not conclusive of any valvular regurgitation, intra-cardiac mass or pacing lead remnant.

The previous device-extraction procedures were re-visited to rule out the possibility of any device lead remnants contributing to recurrent sepsis. No obvious source was identified. The patient had worsening of angina and was referred to the cardiothoracic team following a diagnostic angiogram. At the time of coronary artery bypass surgery, pacing lead insulation was found in the right ventricle. This was removed (Figure 1) along with thrombus from the right atrium. The lead insulation was positive for MRSA, and histology of the thrombus revealed fibrin. Post-operatively the patient recovered well on intravenous vancomycin. Subsequently he
underwent permanent pacemaker implant and remains well.

Discussion

Pacemakers are increasingly used in today’s clinical practice, and an underappreciated complication and treatment dilemma arise when intra-cardiac leads become infected from a systemic bacterial infection. Pacemaker infections are treated with device extractions.1 Percutaneous lead extractions have high procedural success when performed by experienced operators.2 However device extractions might not be complete. Pacing lead remnants rarely cause persistent infection and are usually detected on imaging. However, in the present case, imaging was not useful, as the radio-opaque material had been extracted and the lead insulation remnant was not evident on radiography.

Despite the known high procedural success, cardiac device related infective endocarditis should be considered after lead extraction in patients presenting with sepsis even in the presence of normal imaging.

Conflict of interest: None declared.

References


Figure 1. Infected lead insulation remnant.