

Image in cardiology

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A 67-year-old woman was referred with an "oozing" pacemaker wound for an opinion regarding whether the pacemaker pocket was infected. She had her original pacemaker implanted in 1984 and had had a number of pacemaker replacements, the most recent in 2005. She presented 6 months ago to her doctors with rigors, "soaking sweats" and loss of weight of 12kg and was treated for various presumed infections without resolution. A few months later, she noted a discharge from the pacemaker wound. Local wound treatment was given and despite attempts by a surgeon to bury the pacemaker deeper and close the wound, the problem recurred. On examination the pacemaker wound revealed a draining sinus which, after cleaning, showed exposed leads and infected granulation tissue (Figure 1).

This patient clearly had both local pacemaker wound sepsis and endocarditis. Blood cultures were positive for coagulase negative staphylococcus. Before planning lead extraction, echocardiography was done. Transthoracic echocardiography was reported as possibly showing some "thickening" of the right ventricular pacing lead. The transesophageal echocardiogram, however, showed a large

elongated pedunculated mobile vegetation 0.75 × 3cm attached to the pacing lead and prolapsing in and out of the tricuspid valve. Figure 2 shows the transesophageal images in various phases of the cardiac cycle with the vegetation.

Examination of the patient actually was superfluous as the history was that of pacemaker sepsis. Pacemaker sepsis may present with local wound inflammation, erosion, pain and swelling or with general symptoms of infection for which no other cause can be found. A high index of suspicion of infection is necessary in all patients with cardiac hardware. Pacemakers rarely erode spontaneously. Erosion is a sign of sepsis. Also, if leads or the pacemaker are seen to be exposed, contamination of the system has occurred. Closure of the wound without or with antibiotics will not result in long-term resolution of the problem.

The only treatment for this is complete, not partial, pacemaker system explantation or extraction, i.e. of the pacemaker and entire lead. Partial removal will not eliminate the problem. Cutting the pacemaker lead short, first and most importantly achieves nothing because although the local wound site may appear to heal, it does not eliminate the risk of systemic infection, for which the nidus is the bacteria harboured under the pacemaker lead insulation, and secondly, is contraindicated if percutaneous lead extraction is to be attempted. Prior to attempting lead extraction, cardiac imaging for vegetations is needed. It is recommended that if vegetations related to the pacing lead are larger than 10mm, surgical removal is needed, as in this patient with on-pump open heart surgery.



FIGURE 1: The pacemaker wound



FIGURE 2: The transesophageal echocardiogram in various phases of the cardiac cycle showing the large echobright mobile density, the vegetation (V), which was attached to the pacing lead, prolapsing in and out of the right ventricle (RV). (Abbreviations: RA=Right atrium, LA=Left atrium, TA=Tricuspid annulus)