

# Recurrent Pneumonia Related To Pacemaker Lead Infection

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## Abstract

Lead endocarditis is an infrequent and serious complication of pacemaker implantation. Its clinical presentation is in most of the cases atypical. When dealing with patients with persistent fever and implanted cardiac device, high suspicion is needed for early diagnosis.

In our case, a young patient with an intracardiac device implanted was treated twice for pneumonia before the diagnosis of lead endocarditis was established according to Duke's criteria. The contribution of transesophageal echocardiography in diagnosis was extremely important.

## CASE REPORT

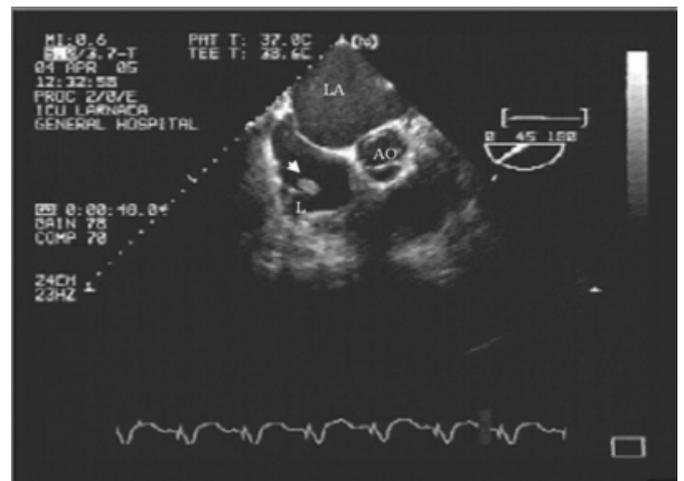
A 40 year old man with a history of dilated cardiomyopathy, presented to our hospital complaining of shortness of breath and general fatigue for the last few days. Eighteen months before an implantable cardioverter defibrillator (ICD) with biventricular pacing was implanted for life threatening ventricular arrhythmias and heart failure. The patient was twice hospitalized and treated for pneumonia five months post implantation in the first case and eleven months post implantation in the second. During both episodes he was febrile, with blood cultures positive for *Enterococcus faecalis*. Chest x-rays were compatible with right middle- and left lower lobe consolidation. He had responded well to intravenous antibiotics. Follow up chest x-rays confirmed complete eradication of the infections. His symptoms during current admission were attributed to heart failure deterioration and he was treated with positive inotropes and diuretics. Routine temperature measurements for the first 24 hours ranged between 37.5° C and 38° C.

Chest x-ray showed a small distal right lower lobe consolidation and white blood cell count was raised with polymorphonuclear predominance. Considering the previous two admissions, we were highly suspicious that this was not a primary chest infection. Blood cultures were drawn and they were negative; however, this could be unreliable as the patient was on antibiotics at home on his own decision. Transthoracic echocardiography failed to detect any

vegetations on the ICD leads. A transesophageal echocardiography was performed in order to explore the entire intracardiac route of the leads. On the distal part of the right atrial lead an abnormal mobile mass was visualized (Figure 1).

## Figure 1

Figure 1: Transesophageal echocardiogram revealing the atrial lead showing vegetation at the tip



Diagnosis of infective endocarditis was established according to Dukes criteria by the presence of symptoms, clinical findings, and mobile mass on the tip of right atrial lead on echocardiography.

Gentamicin and vancomycin were given as the best scheme

for culture negative endocarditis. Total explantation of the pacing material followed. For the following six months he was free of any signs of infection relapse but six months after surgical treatment our patient deceased due to deterioration of heart failure.

### DISCUSSION

Cardiac device endocarditis is not a common infection but is a very serious complication of implantation procedures. The reported rate in the literature varies from 0,5% to 5,1%<sup>1,2</sup>. Mortality rate of cardiac device endocarditis has been reported to be 30-35%<sup>3</sup>. Onset of symptoms comes late in the course of the infection, thirty-three weeks on average after the last procedure<sup>4</sup>. Data suggest that cardiac device endocarditis is mainly caused by contamination during the implantation<sup>5</sup>. Delay in the diagnosis is mainly related to the atypical onset or absence of symptoms<sup>6</sup> and to the fact that lead infection is not considered in the differential diagnosis<sup>7</sup>. Infective endocarditis should be diagnosed using Duke's criteria<sup>8</sup>. Transthoracic echocardiography has low sensitivity in documenting neostructures on pacing leads (20-30%)<sup>4,6,9</sup>. Transesophageal echocardiography on the other hand, is a very sensitive (reported sensitivity 90%)<sup>4</sup> and reliable method contributing to the diagnosis and precise characterization of lead lesions. Conservative treatment including combination of antibiotics will not cure the patient as relapse in such cases is almost certain<sup>10</sup>. Removal of the entire pacing system as soon as possible is an effective and generally accepted approach.

### CONCLUSION

Lead endocarditis should be considered early in patients with fever, pulmonary pathology and cardiac device. Transesophageal echocardiography is the most reliable method to confirm the diagnosis of endocarditis in such cases. Complete removal of the pacemaker or implantable

cardiac defibrillator system combined with antibiotic treatment is necessary in the vast majority of these cases.

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