

# Huge Vegetation in a Male with Implantable Cardioverter Defibrillator

CASE REPORT

## Abstract

Due to the increasing use of cardiac implantable electronic devices, infective endocarditis associated with these devices has become more common in the recent years. Rapid diagnosis and appropriate treatment are key points to manage this infection successfully. However, the early diagnosis of cardiac devices implantation related endocarditis is not easy. There may be no obvious local infectious symptoms or signs initially. We describe an old man who was admitted due to pneumonia and final diagnosis was implantable cardioverter defibrillator (ICD) related infective endocarditis. Transthoracic cardioechography showed a huge vegetation (5.91 cm<sup>2</sup>) on the ICD tip in the right atrium, which was protruding into the right ventricle during diastolic phase. He was successfully treated with the surgery of removal of the infected device and proper antibiotics.

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## Keywords

Huge Vegetation; Endocarditis; Implantable Cardioverter Defibrillator.

## Introduction

Risk factors for implanted cardiac devices (ICD) related infective endocarditis include diabetes mellitus, malignancies, immunosuppressive therapy, and local factors related to the pacing system, such as erosion of the pacemaker pouch and the number of previously inserted leads. The clinical symptoms, consequences, and treatment of device infections vary in relation to the location and extent of infection and the clinical characteristics of the patient [1]. More than 3 million implantable cardiac pacing systems exist worldwide currently [2]. Up to 23% of all cardiac device infections is cardiac implantable electronic device related infective endocarditis. If treatment is delayed, complications such as destruction of the tricuspid valve, septic pulmonary embolism, and consecutive abscess-forming pneumonia may occur [3]. Mortality rates

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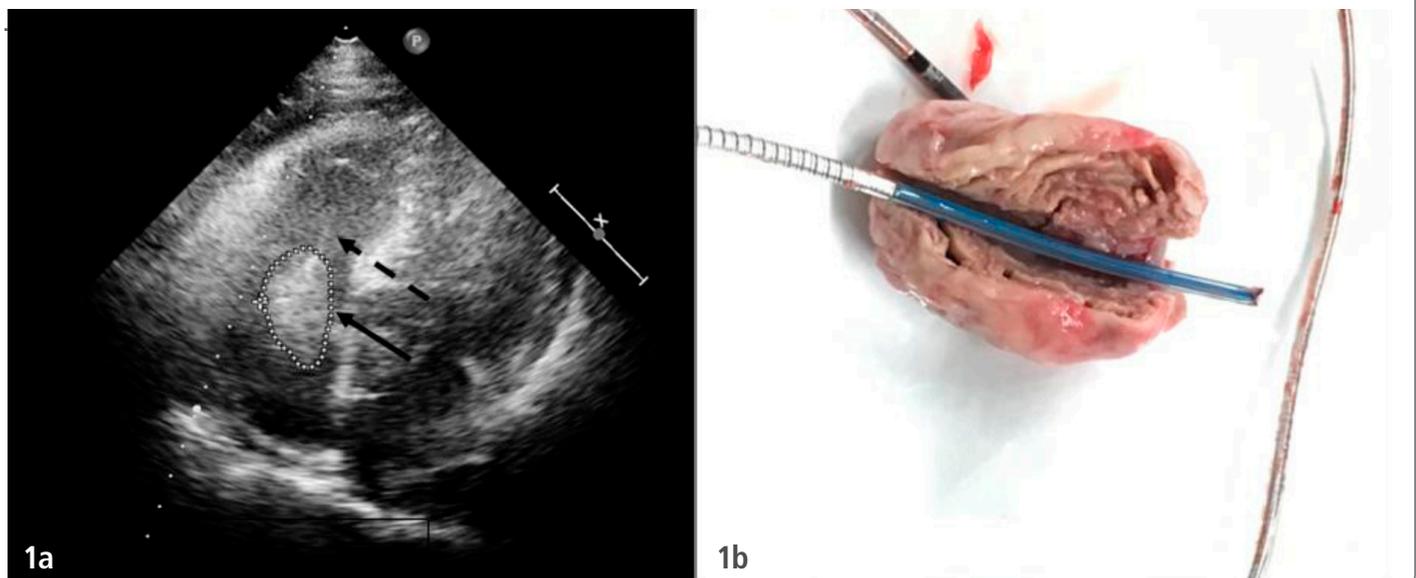
were reported to range from 10.0 to 23.2% [1-3]. ICD related infective endocarditis is usually treated with surgical intervention and suitable antibiotics. Total removal of the infected device is required and associated with a favorable outcome.

## Case report

A 76-year-old male was admitted to our emergency department (ED) due to productive cough and chest pain for 3 days. He has history of diabetes mellitus for more than 20 years, ventricular arrhythmia and received dual chamber implantable ICD implantation 5 years ago. He was febrile with a body temperature of 39.5°C. His blood pressure was 80/50 mmHg, pulse rate was 110 beats/min, and respiratory rate was 21 breaths/min. Initial blood laboratory examination revealed abnormalities as follows: white blood cell counts  $28.5 \times 10^3 /\mu\text{L}$ ; high concentration of procalcitonin ( $>200 \text{ ng/mL}$ ) and C reactive protein (12 mg/dL). Physical examination revealed bilateral fine crackles of breath sound and a grade 3/6 pansystolic

murmur over the left sternal border. Chest radiography revealed cardiomegaly and bilateral lung infiltrates. Transthoracic cardioechography showed mobile mass suggestive of a vegetation 5.91 cm<sup>2</sup> in area on the lead (Figure 1a). The diagnosis of endocarditis was made, and broad-spectrum antibiotics were administered. Initial blood culture at ED grew *Enterococcus faecalis* and selective antibiotic treatment was prescribed. However the patient did not improve even after 3 day-antibiotic treatment. We consulted cardiovascular surgeon and decided to remove the infected pacing lead by surgical exploration. A huge vegetation (diameter around 5 cm) affection of the ICD lead wire and tricuspid valve was noted during the surgery (Figure 1b). The temporary pacemaker was used after extraction and new temporary pacing wires were placed successfully 5 days later. Following an uneventful post-admission period, he was discharged smoothly. Currently, he presents a good clinical status and has no evidence of relapses.

**Figure 1:** **1a.** Transthoracic echocardiogram view showing a hyperechogenic mass with 5.91 cm<sup>2</sup> in area compatible with vegetation (arrow) on the ICD lead (broken arrow) in the right atrium. **1b.** A huge vegetation measuring up to 5 x 2.5 x 1 cm attached to the ICD lead into the right atrium with affection of the tricuspid valve



## Discussion

Pacemaker lead or ICD lead infection associated infective endocarditis is considered to be the most severe form of endocarditis, which has shown an increasing incidence during the past decades, representing almost 10% of patients with endocarditis in the last 6 years [4]. Endocarditis involves the aortic valve the most common, the mitral valve more common, and tricuspid and pulmonary valve the least common [5]. The incidence of right sided endocarditis about 5% of patients with endocarditis and predominantly affects the tricuspid valve (TV). Tricuspid valve endocarditis (TVE) frequently occurred in patients with intravenous drug abusers (IVDAs). TV vegetations generally grew to a larger size (> 2 cm) because of low pressure in right heart chambers [6]. There are two choices for pacing after removal the infected devices, including transvenous permanent pacemaker or abdominal pacemaker [6-8]. Insertion the new device transvenously in the contralateral site around 10 days after the extraction of the pacemaker infection was suggested by Guillermo et al [8]. In another sixty consecutives cases, the new permanent pacing was implanted on average 5 days after extraction [9]. We described a case suffered from huge vegetation (about 5 cm in diameter) on the ICD lead in the right atrium, which was protruding into the right ventricle during diastolic phase of the cardiac cycle.

## Conclusion

Endocarditis attributable to pacemaker or ICD infection can cause severe comorbidities and result in high mortality rates. In addition to adequate antimicrobial therapy, the surgery of complete removal of the device is usually required. Clinicians should be aware of the associated risk factors and complications.

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