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Case Report

Late erosion as a serious complication of permanent pacemaker implantation in a patient with Wegener's granulomatosis

Abdallah F.Omeish, Haitham Khoshman, Saaed Jaber

ABSTRACT

We report a case of late erosion of a permanent pacemaker generator after 6 months of implantation in a patient with Wegener's granulomatosis who developed complete heart block, during the inactive stage of the disease. (Rawal Med J 2009;34:).

Key words

Pace maker, Wegners granulomatosis, heart block.

INTRODUCTION

Wegener's granulomatosis (WG) is a complex multisystem necrotizing granulomatous vasculitis of both small arteries and veins, typically involving the respiratory tract and kidneys. Although the heart is not a classical target for WG, its involvement is not uncommon and has been reported in 8%[1]-11.8%[2] of patients. The commonest pathological manifestation are pericarditis and arteritis with myocarditis occurring in ~25% of all cases with cardiac involvement.[3] The commonest clinical presentation are of pericarditis and supraventricular arrhythmias,[4] but heart block,[5] silent myocardial infarction,[6] and cardiomyopathy secondary to both intrinsic muscle involvement[7] and cyclophosphamide therapy[8] have also been rarely reported. We report a case of late erosion of a permanent pacemaker (PPM) generator after 6 months of implantation in a patient with Wegener's granulomatosis who developed complete heart block, during the inactive stage of WG. To our knowledge, this is the first report of such a complication in a patient with W.G.

CASE PRESENTATION

A 34 yr old unmarried female Jordanian patient was diagnosed to have WG since 2003 and was on combination of oral prednisolone and oral cyclophosphamide with good response. She was on oral hypoglycemic agents for diabetes mellitus.

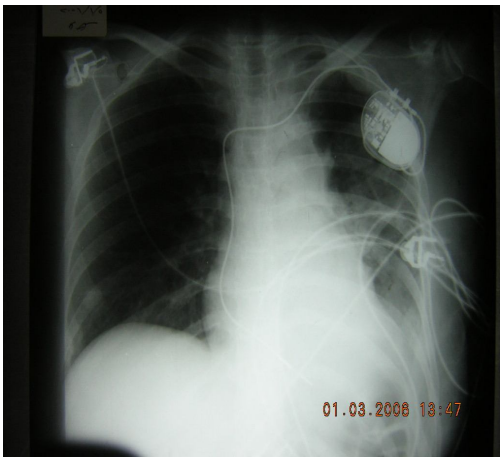

Fig 1. The first permanent pacemaker that was inserted in the left pectoral area.

The patient presented through the E/R in December 2005 complaining of dizziness, shortness of breath and fatigue of 1-week duration. She was afebrile with stable vital signs. Auscultation revealed no gallop rhythm with variable S1 intensity, while her lungs revealed bronchial breathing over the left upper lobe corresponding to the granulomatous lung affection with no abdominal organomegaly, signs of arthritis or lower limb edema. Her EKG showed third degree heart block with a ventricular escape rhythm of 31/minute. An echocardiogram revealed normal systolic function and diameters with no evidence of pericardial effusion, valvular insufficiency or vegetations. Her CBC, ESR, electrolytes, liver enzymes, CPK, ABG and PPD were normal. Serum creatinine was 1.5mg/dl.

Fig. 2. Late erosion of the pocket exposing part of the lead.

A temporary pacing lead was inserted and pulse methylprednisolone 500 mg intravenously for 3 days and 750 mg cyclophosphamide were commenced. Normal sinus rhythm was not achieved and her complete heart block didn't recover after 8 days. Cardiac catheterization was performed and revealed normal epicardial coronary vessels and confirmed normal left ventricular systolic function. A multislice CT scan was normal likewise. Decision was made to implant a permanent pacemaker (PPM) and a Medtronic VVI generator was implanted in the left subclavicular fossa and was connected to a lead embedded in the right ventricular apex (Fig 1). She received 7 days antibiotic course following PPM. The patient did well till 8 months after her PPM insertion when she presented to our cardiology clinic complaining of mild pain around the left subclavicular pocket with occasional yellowish discharge through small openings over the pocket surface that were noticed only 3 days prior to her presentation (Fig 2).

She was initially very depressed and refused the idea of implanting another generator in her opposite subclavicular area. Therefore, a trial to surgically debride her eroded infected pocket wound and to reposition the generator into a newly fashioned pocket in the left pectoral area, was offered to her while being maintained on 3rd generation cephalosporin, gentamycin and floxacillin. Of note is that the pocket's swab culture revealed coagulase negative staphylococcus epidermidis that was sensitive to the initially administered antibiotics. After 10 days of intravenous antibiotics and daily debridement of the infected pocket and sterilization of the extravascular part of the

pacemaker lead, the appearance of healthy granulation tissue in the pocket was observed with no more formation of pus. A new pacemaker generator was implanted in a newly fashioned pocket in the same pectoral area and hooked to the previously implanted lead.

The wound showed purulent discharge from the diseased site and new generator was therefore explanted and the transvenous pacing lead was successfully removed by applying moderate traction. The case was discussed in a multi-discilipinary conference of our institute and decision was made to implant a new generator epicardially rather than through her right subclavicular vein. Bipolar epicardial electrodes (Medtronic Capsure epi model 4965 steroid eluting leads) were fixed to the right ventricle and the generator was placed in the upper abdominal wall using a subxyphoidal incision. The patient was administered 14 days of anti-microbials. She was seen 1 year after her epicardial pacemaker implantation with completely healthy pocket and stable pacing and sensing generator parameters. No recurrence of infection was observed.

DISCUSSION

Complete heart block in WG patients in both active[5] and in the inactive stage of the disease has been reported.[9] Its occurrence mandates the immediate empirical use of aggressive immunosuppression regimen with the hope to induce remission and bring the rhythm back to normal. In our case, the patient was considered to be in the remission prior to her cardiac presentation. The use of pulse steroid and cyclophosphamide therapy was not useful in our case in bringing back the rhythm to normal sinus rhythm as reported in a Turkish case.[9] Performing cardiac catheterization was felt mandatory to rule out any underlying coronary artery disease especially since the patient was diabetic.

Our patient didn't have any prodrome suggesting a viral myocarditis. Heart block would be mostly likely related to either intrinsic AV node involvement by the disease or focal myocarditis around the AV node. Whilst it is possible that dormant infection contracted at the time of pacemaker implantation contributed to the late erosion of the generator, we feel that immunosuppression and poor healing process themselves were most likely the etiological factors in this patient.

Cardiac device infection (CDI) was microbiologically confirmed based on positive culture from the generator pocket. In fact, management of CDI is a challenge for both cardiology and infectious disease specialists. Reported incidence rates of CDI for PPM's range from 0.13% to 19.9%.[10] Staphylococci adherent to polymer surfaces and their capacity for biofilm formation contribute to the pathogenesis of infections with implanted medical devices.[11] Some investigators advocate conservative treatment with antibiotics and generator pocket debridement without hard-ware removal.[12] Most previously published reports, however, have shown unacceptably high failure rates with conservative approach.[13] The sterilization of infected implanted devices by antibiotics is extremely difficult. This is why prolonged use of intravenous antibiotics is not the recommended form of treatment for infected pacemakers if the implanted material has not been removed. [11, 13]

The consensus on using the epicardial approach was based on the idea of providing deeper space for the pocket that will incubate the generator; a factor which may lessen the possibility of any similar late erosion in the future through the subcutaneous tissue of this immunocompromised patient. In conclusion, we strongly recommend operators to be very vigilant when implanting pacemakers for immunocompromised patients. Pocket infection in these situations is a major problem for both the physician and the patient. Epicardial approach is a good alternative when the pectoral area is infected.

From Department of cardiology, Queen Alia Heart Institute/ King Hussein Medical Center, Jordan.
Correspondence: Dr Abdallah Omeish. PO Box: 2251 Um Al Summaq, Jordan. Zip code 11821. E-mail: Abdallah.omeish@yahoo.com Tel 009626-5371425.
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