Case report - Cardiac general

Right paracardiac mass due to organized pericardial hematoma around retained epicardial pacing wires following aortic valve replacement

Aditya Kapoora,*, Sanjiv Syalb, Nirmal Guptab, Archana Guptac

aDepartment of Cardiology, Sanjay Gandhi Post Graduate Institute of Medical Sciences, Lucknow 226014, India
bDepartment of CardioVascular and Thoracic Surgery, Sanjay Gandhi Post Graduate Institute of Medical Sciences, Lucknow 226014, India
cDepartment of Radiology, Sanjay Gandhi Post Graduate Institute of Medical Sciences, Lucknow 226014, India

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Abstract

The use of temporary epicardial pacing wires during cardiac surgery is a routine procedure and has been associated with low morbidity. We describe a rare case of right paracardiac mass due to organized pericardial hematoma with right atrial compression around the epicardial pacing wires left in-situ, presenting three months following aortic valve replacement surgery. The case highlights the fact that such delayed complications can rarely occur around retained epicardial pacing wires following open heart surgery especially in patients on oral anticoagulants. The clinician should be alert to such an occurrence and during follow-up echocardiography always pay attention not only to the valve and ventricular function, but also to the pericardial and extra-pericardial space.

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1. Introduction

The use of temporary epicardial pacing wires during open heart surgery is generally associated with a low morbidity. We describe an extremely unusual case who presented three months following aortic valve replacement (AVR) and was detected to have a right paracardiac mass resulting from an organized pericardial hematoma round the retained epicardial pacing wires. Interestingly, an echocardiogram done only two months prior was completely normal.

Most complications related to bleeding in or around the epicardial pacing wires tend to occur in the immediate postoperative period during removal of the wires. Development of such an organized hematoma after nearly three months is extremely rare. Clinicians should be alert to such an occurrence and during follow-up echocardiography always pay attention not only to the valve and ventricular function, but also to the pericardial and extra-pericardial space.

2. Case

The patient was a 38-year-old male, who was symptomatic with shortness of breath and effort intolerance, New York Heart Association (NYHA) class III for the last six months. Clinical examination was consistent with severe aortic valve stenosis which was confirmed on echocardiography that revealed a bicuspid aortic valve with severe calcific stenosis (peak gradient of 76 mmHg), concentric left ventricular (LV) hypertrophy and mild LV dysfunction (ejection fraction 45%). The patient was planned for an AVR and a preoperative coronary angiography was performed revealing normal coronary arteries. He underwent AVR using a 27 mm St. Jude’s medical mechanical prosthetic valve (St. Jude’s Medical Inc, St. Paul, MN, USA). After weaning from cardiopulmonary bypass (CPB), as per institutional protocol for heart valve operations, two epicardial pacing wires (one each in the right atrium and the right ventricle) were inserted and fixed with 5/0 prolene sutures taking superficial bites into the heart. No additional sutures were required for hemostasis at the pacing wire sites. As per routine, the patient was started on oral anticoagulants (warfarin) the following day to maintain a target international normalized ratio (INR) of between 2 and 2.5.

Postoperatively the patient required intercostal tube drainage for right-sided pleural effusion and multiple transfusions with four units of packed red blood cells (RBCs), since the hemoglobin dropped from 14.1 to 5.9 g/dl (141 to 59 g/l). His INR however at all times was maintained between 1.7 and 2.0. The patient had an episode of acute renal failure in the third postoperative week, precipitated by a bout of gastroenteritis. This was successfully managed with i.v. fluids and antibiotics, following which the patient made an uneventful recovery and was discharged in a week. An echocardiography done one month after AVR, revealed
normally functioning prosthetic valve with normal LV function.

The patient presented to the hospital three months later for a routine check-up. He was asymptomatic and clinical examination revealed a mildly elevated jugular venous pulse (JVP) with well audible valve clicks. The INR was 2.2 and other biochemical parameters were within normal limits. An chest X-ray revealed right paracardiac enlargement (Fig. 1a). Echocardiography showed normal LV and prosthetic valve function and a large spherical circumscribed cystic mass, just anterior and lateral to right atrium (RA), and compressing the RA free wall (Fig. 1b, Video 1). There were no signs of pericardial effusion or tamponade.

A 64-slice spiral computed tomography (CT) thorax was subsequently performed confirming a large organized hematoma around a metallic nidus which possibly represented the remaining portion of the retained epicardial pacing leads in the pericardium, causing extracardiac compression of the RA as noted on echocardiography (Fig. 2a,b).

3. Discussion

Temporary epicardial pacing wires are routinely sutured to the atrial and/or ventricular myocardium during open heart surgery and serve both to diagnose as well as treat cardiac brady- or tachyarrhythmias following surgery. Their use is generally associated with a low morbidity with the commonest complication being failure to adequately sense or capture.

Reported complications are rare and include bleeding, vascular perforation, atrial or ventricular laceration during wire removal with tamponade, avulsion/laceration of...
saphenous vein graft, infection, sternobronchial fistula and even cardiac strangulation by wire ensnarement during removal of wires [1—4]. Retained pacing wires may rarely also migrate and trans-bronchial, lung, pelvic and trans-epidermal migration of pacing wires has also been reported [5—7].

Most complications related to bleeding in or around the epicardial pacing wires tend to occur in the immediate postoperative period during removal of the wires. Our patient had an echocardiogram done at one month following the surgery which was completely normal. Development of such an organized hematoma after nearly three months is extremely rare and to the best of our knowledge, has not yet been reported in the literature. The cause of such slow and late development of a hematoma though conjectural, could be due to minor micro-trauma at the time of pacing lead removal, with continued insidious leak at the site. The fact that the patient was on oral anticoagulants would have added to the propensity of bleeding. Since it was a contained and slow leak which subsequently improved, the patient remained relatively asymptomatic despite significant visual compression of the RA.

4. Conclusion

It may not be unusual to encounter delayed complications related to retained epicardial pacing wires especially in patients on long-term oral anticoagulation. During follow-up of such patients, it is essential to pay attention not only to the valve and ventricular function, but also to the pericardial and extra-pericardial space so as not to miss the rare occurrence of such a phenomenon.

References