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Late cardiac tamponade after pacemaker implantation in patient with third degree atrio-ventricular block - a case report

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Abstract:

Patients suffering from third degree atrio-ventricular block need emergency treatment. Permanent cardiac pacing is the therapy of choice in third degree atrio-ventricular block. The incidence of complications following pacemaker implantation is low. The treatment is relatively safe. We present a case, which is an example of a very rare complication of cardiac pacing.

Key words: pericardial effusion, cardiac tamponade, myocardial perforation, pacemaker

Introduction:

Permanent cardiac pacing is the therapy of choice in third degree heart block. In the vast majority of cases, the procedure takes place without any complications. This is relatively safe kind of treatment. The most common complication is hematoma at the site of pacemaker implantation. Potentially significant complications include pneumothorax, hemothorax, lead displacement, lead-dependent infective endocarditis, pulmonary embolism [1]. Myocardial wall perforation is a rare complication in patients undergoing pacemaker implantation [2]. Usually it occurs during permanent pacemaker implantation [3]. This complication has been reported in up to 1% of patients [4]. Late lead perforation (≥ 30 days after implantation) is rarer. It occurs in 0,1-0,8% of pacemaker implantations [5]. In this article we present a case of late myocardial perforation as a consequence of permanent cardiac pacemaker implantation.

Case report:

A 59-year old patient with multiple medical comorbidities including hypertension, stable angina pectoris, chronic heart failure (NYHA II), dyslipidemia, type 2 diabetes was admitted to the Department of Cardiology in order to perform control coronary angiography. He denied chest pain, palpitation, shortness of breath, weakness, cough, orthostatic dizziness, faints. Five months before patient had undergone DDD pacemaker implantation due to third degree A-V block and symptomatic bradyarrhythmia episodes (ventricular rate of 40 beats per minute). Ventricular and atrial leads were inserted via left subclavian artery under fluoroscopic guidance into the right ventricle apex and into the right auricular appendage. At the time of admission to the hospital physical examination was normal. Laboratory tests were within normal limits, except for CRP (33,168 mg/l). Electrocardiogram showed effective ventricular stimulation controlled by sinus rhythm about 75 beats per minute. Routine echocardiography revealed the presence of a large pericardial effusion up to 3,4 cm in diastole (fig. 1). The patient did not complain of any symptoms typical of cardiac tamponade. Pericardiocentesis and pericardial drainage were performed. The drain was left in the pericardium for four days. Finally 1650 ml of bloody liquid was obtained. Examinations of the effusion showed no evidence of cancer or infection. Chest computed tomography revealed

unusual location of both ventricular and atrial leads, which perforated the myocardium (fig. 2). Based on the results of additional tests ventricular lead replacement (into the right ventricular outflow tract) and atrial lead reposition were performed. Pacemaker remained the same. The chest X-ray confirmed the correct location of endocardial leads (fig. 3). After effective treatment and follow-up without complications, the patient was discharged home with appropriate recommendations.

Discussion:

Cardiac tamponade resulting from perforation of the myocardium by pacemaker leads should be regarded as a rare complication of pacemaker leads inserting. Cardiac perforation can be acute, subacute or delayed if it occurs within 7 days, between days 7-30 or greater than 30 days post-procedure [6]. The elderly are more prone to heart perforation because of the fragility of myocardium. Acute perforation is normally associated with haemodynamic instability and cardiac tamponade, which requires pericardiocentesis or even surgical intervention [7]. Late lead perforation may present with pacemaker malfunction, chest pain, dyspnoea or even life-threatening state such as cardiac tamponade, but can also be detected incidentally during chest imaging for other reasons [3]. Slowly growing pericardial effusion may not give any typical symptoms. This condition can be fatal if it isn't detected early. Regular cardiological checks-up including pacemaker follow up are crucial in detecting such states. Chest X-ray, echocardiography and chest computed tomography are helpful in the diagnosis of perforation of the heart.

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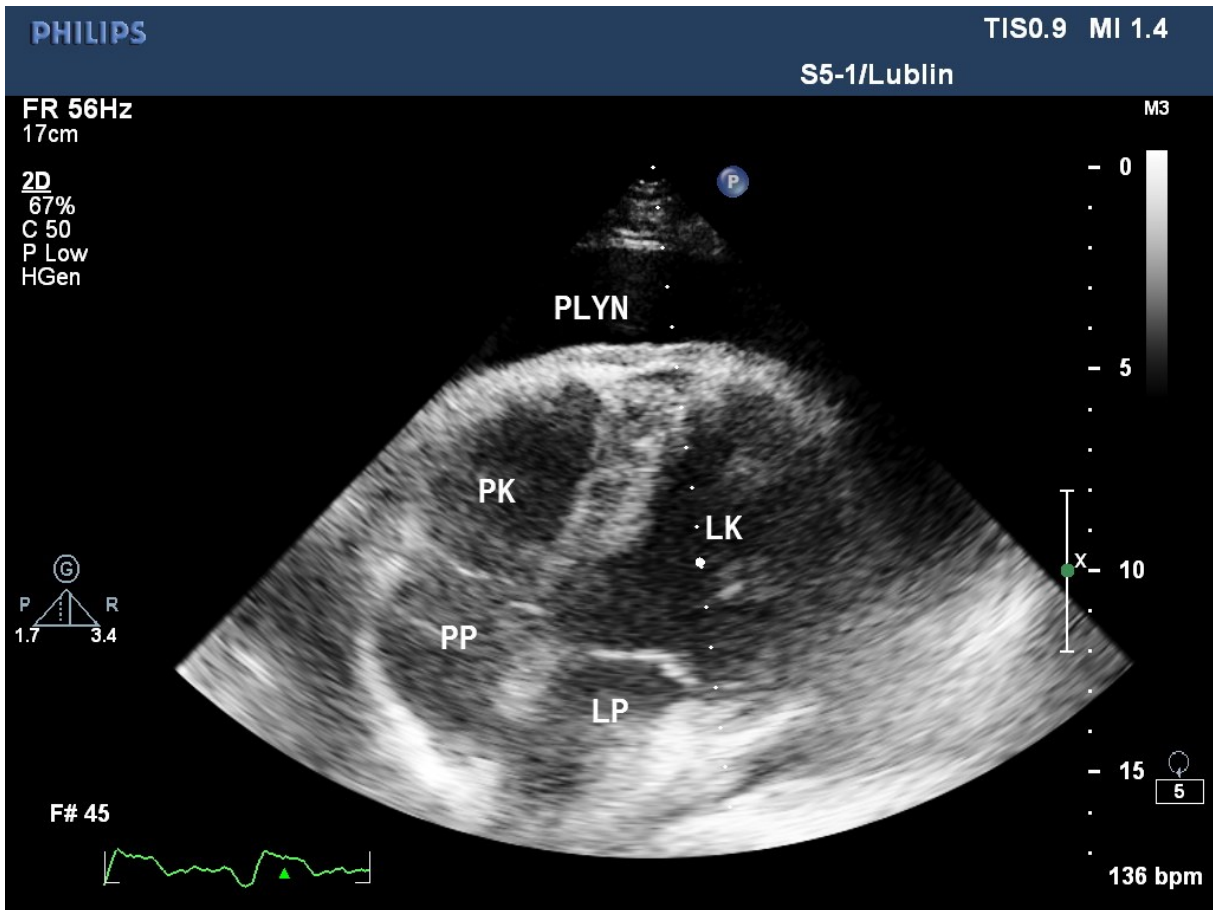


Fig. 1. Large pericardial effusion



Fig. 2. Unusual location of pacemaker leads

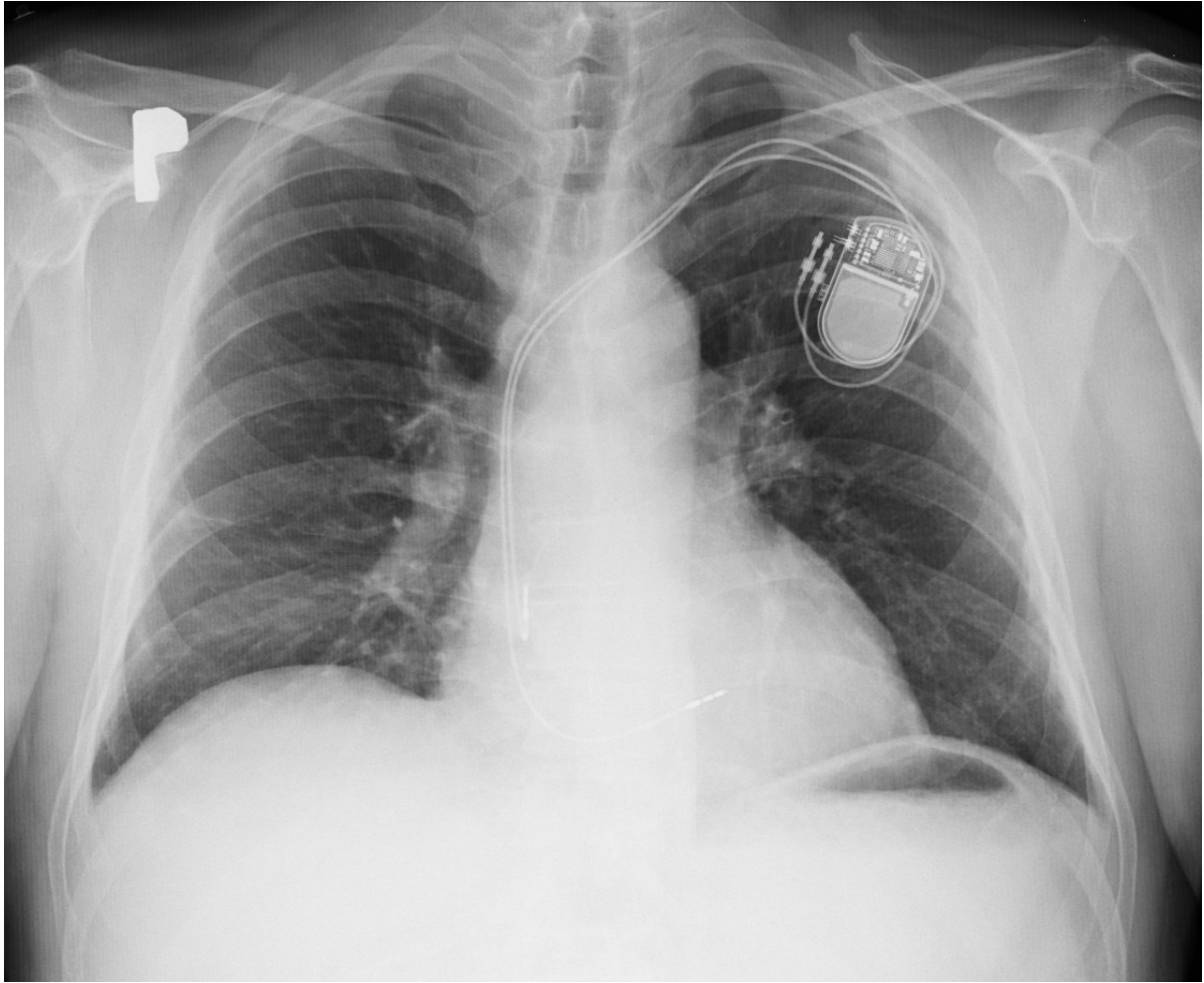


Fig. 3. Correct location of endocardial leads