

## CASE IMAGE

**Unexpected pacemaker complication: all implanted leads on the left heart*****Beklenmedik pacemaker komplikasyonu: Tüm leadler sol kalpte***

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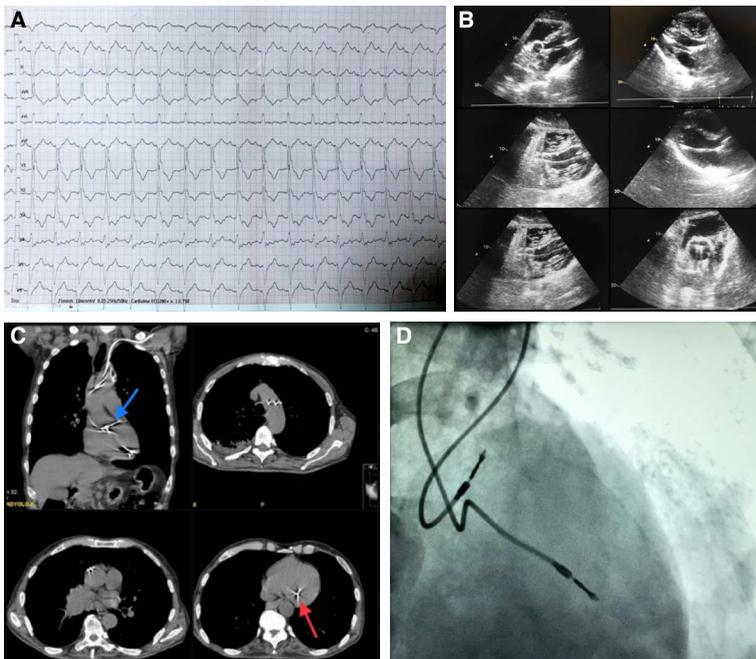
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An 81-year-old male patient with a history of hypertension and dual-chamber pacemaker implantation 5 months earlier due to high-grade atrioventricular block performed at another center was admitted to the emergency department with dysarthria

and confusion. A physical examination revealed a blood pressure of 120/70 mmHg, a pulse rate of 90 bpm, an oxygen saturation rate of 95%, and a respiratory rate of 24/minute. It was unremarkable, except for a unilateral right-sided weakness. An emergency cranial computed tomography (CT) exam demonstrated acute and chronic ischemic zones in the area of the left middle cerebral artery. Electrocardiography demonstrated a pacemaker rhythm with a right bundle branch block pattern (Fig. A). Interrogation of the pacemaker revealed a VVI mode with normal threshold, amplitude, and impedance of RV leads. An attempt to measure the right atrial lead parameters yielded no sensing or capture. Transthoracic echocardiography revealed pacemaker leads that ran along the aorta to the left heart chambers without any visible thrombus or vegetation (Fig. B). A thorax CT angiography confirmed the exact positions of the pacemaker leads: Both leads were advancing to the left heart

chamber (ventricular lead at the apex of the left ventricle, atrial lead at the non-coronary cusp) via the arterial route from a subclavian arterial puncture (Fig. C). The position of the leads was confirmed with fluoroscopy (Fig. D). Based on the fact that there was a high surgical risk for removal of the left-sided leads, the heart team concluded that lifelong, effective anticoagulation therapy should be pursued during follow-up. Left-sided lead implantation is a very rare, but very serious, complication that can lead to thromboembolic events, aortic valve endocarditis, ventricular perforation, ventricular arrhythmias, and pericardial effusion. It is very important to be aware of this complication during the implantation procedure. First of all, operators must be sure that the guidewire is in the venous system by advancing the guidewire down to the inferior vena cava. Despite successful venous puncture, rarely, in the presence of atrial or ventricular septal defects, pacemaker leads can cross over to the left-sided chambers. Secondly, the lead positions should be checked from various angles after implantation. Finally, a right bundle branch block configuration observed on an electrocardiogram should alert the operator to a possible malposition of the leads. Patients with left-sided pacemaker leads should be effectively anticoagulated for life due to the increased thromboembolism risk. Surgical retrieval of the leads is recommended when possible, particularly in symptomatic patients. Although there are a few case reports, percutaneous extraction of the leads is not recommended because of the high risk of thromboembolism during the procedure.



**Figures– (A)** The pattern of the right bundle branch block seen on the electrocardiogram. **(B)** A transthoracic echocardiography image of the lead in the left heart. **(C)** A thorax computed tomography image (blue arrow: atrial lead, red arrow: ventricular lead). **(d)** A fluoroscopy image of the leads.