Patient with DDD pacemaker and recurrent syncope – case report

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Abstract

Recurrence of symptoms in a patient with an implanted pacemaker requires diagnostic workup for potential pacing system dysfunction. We present a case of a 79-year-old woman

with recurrent syncope that appeared 4 months after implantation of a DDD pacemaker.

Case report

A 79-year-old woman was referred to the outpatient clinic for pacemaker system evaluation because of recurrent syncope and presyncopal states during 2 weeks before the visit. The patient underwent DDD pacemaker (PM) (Sensia DR, Medtronic, USA) implantation 4 months earlier due to symptomatic complete atrioventricular block. Both leads were implanted through the cephalic vein; in-hospital chest X-ray was not performed. Periprocedural electrical parameters of the system were normal. During routine 3-month follow-up

she was found asymptomatic and the function of the PM was normal with stable trends of thresholds, impedances and sensing, without atrial or ventricular high rate episodes.

The current interrogation revealed high impedance measurements of the ventricular lead (max. 2,062 ohms) in the memory of the pacemaker which triggered a Lead Warning alert (Fig. 1). The electric parameters during the visit were normal (ventricular threshold 0.75 V at 0.4 ms, impedance 724 ohms, sensing >11.2 mV). Provocative manoeuvres did not unmask any system malfunction. The patient was admitted

Figure 1. Chronic trend and additional data about ventricular lead impedance.

to the hospital. Telemetric ECG monitoring revealed episodes of 3rd degree atrioventricular block without pacing spikes. Echocardiography showed no significant abnormalities. Chest X-ray showed normal position of the leads, but suggested suboptimal position of the ventricular lead pin inside the connector block (Fig. 2). The patient was referred for pacing system revision. Perioperative ventricular lead electrical parameters were normal. Loose set screw was confirmed. After correction of the lead pin position effective ventricular pacing was restored.

Figure 2. X-ray of the pocket area suggesting inappropriate position of ventricular lead pin inside connector block (loose set screw, black arrow).

Discussion

Recurrence of symptoms in a patient implanted with a pacemaker necessitates diagnostic workup for potential pacing system failure. Among pacing system dysfunction lead

Initial Interrogation

Pace Polarity	Bipolar
Sense Polarity	Bipolar
Lead Monitor	Monitor Only
Lead Trend	On

Measured Impedances

Initial	727 ohms
At Interrogation	747 ohms
Lifetime Min	606 ohms
Lifetime Max	2,062 ohms

Notable Data

High Impedance	17,373
Low Impedance	0
Lead Warning	08/11/17

dislodgement, perforation, lead damage, pacing threshold increase or problem with lead pin-connector block contact (loose set screw) should be taken into account. Different types of system malfunction are more likely at different time points after PM implantation and have a characteristic presentation. In some cases there are no pacing artefacts or captured atrial or ventricular complexes in the ECG. In this type of disorder the most common cause is oversensing. The other one is open circuit secondary to conductor fracture or loose set screw, which usually presents with failure of output due to complete disconnection of the lead pin and the pacemaker^[1]. Sometimes, minimal contact between the pin and the connector may permit the transmission of the electrical current, but the delivered energy is not enough to capture the paced chamber. Measured parameters will show infinitely high pacing impedance, but only during complete disconnection. In our case, the lead pin stayed in the proper place most of the time and electrical parameters were normal. The present case illustrates the insidious nature of the pathology, which presented with normal electric measurements of the system and was not exposed with provocative manoeuvres. Diagnostic features of the modern pacemakers along with additional tests allowed for the proper diagnosis. In the diagnosis of loose set screw the chest X-ray is of incontestable importance, but the picture may not be obvious, like in our case. Cases of this type of pacing system malfunction are sometimes described^[2,3], but rarely with only partial loosening of the lead.

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