

What is the Diagnosis?

CASE PRESENTATION

Pre-syncope during pacemaker follow-up

An 83-year-old female implanted a dual-chamber pacemaker (Adapta DR) one year before threatening a sinus node disease with symptomatic sinus arrest (up to 4.2 s). In the last month, the patient complained of palpitation and dizziness. She has a previous history of hypertension and nondialytic chronic renal failure. The long-term medical therapy consisted daily of losartan 100 mg, atorvastatin 10 mg and aspirin 100 mg. Pacemaker telemetry showed a 90% battery, normal function of pacing leads and short episodes of atrial fibrillation. Statistical pacing was 92% in the atrium and 26% in the ventricle. The pacemaker was programmed in managed ventricular pacing (MVP) mode with sensor (AAIR and DDDR) and basic heart rate of 65 cpm. A 24 h-Holter monitoring was used in the investigation (Fig. 1). What is the mechanism?



Figure 1. ECG was recorded during moderate efforts with complain of dizziness and palpitation.

ANSWER

Initial analysis of ECG (Fig. 1) may be suggesting some dysfunction of pacemaker. However, careful inspection of track can help the diagnosis. In Fig. 2, MVP function was adequately activated with two different moments of DDDR and AAIR pacing at cycle of 750 ms. Briefly, the MVP mode is an atrial-based pacing mode designed to promote intrinsic conduction and to reduce the percentage of unnecessary right ventricular pacing. Managed ventricular pacing provides the following functions: AAI mode pacing when AV conduction is intact.

Figure 3 presents a schematic explanation of the functional findings of the pacemaker. The ECG recorded during 24 h-Holter showed some aspects of functionality of dual-chamber pacemaker: 1) atrial pacing guided by sensor during patient movement; 2) MVP promoting a preferential intrinsic atrioventricular conduction; 3) safety paced episodes due to crosstalk; and 4) functional ventricular refractoriness of pacemaker. After adjusting the pacemaker mode (DDDR), atrial sensibility and changing in the form of stimulation of both chambers (from unipolar to bipolar), the symptoms were completely resolved; and a 24 h-Holter monitoring showed a regular paced rhythm.



Figure 2. Different asymptomatic moments of MVP functionality during 24 h-Holter monitoring: (a) DDD mode and (b) AAI mode.

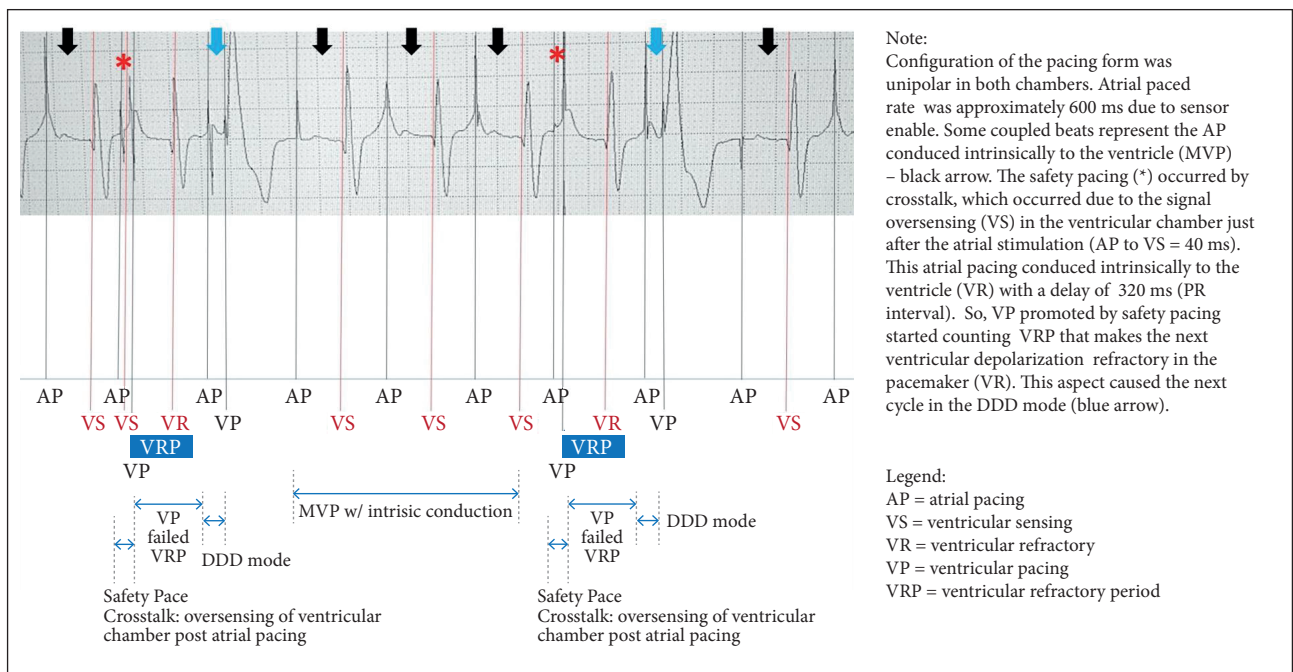


Figure 3. Schematic representation of ECG recorded during symptomatic event.

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