

EP CASE REPORT

Presyncopal episodes after implantation of dual-chamber pacemaker programmed in SafeR pacing mode

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Introduction

Right ventricular (RV) pacing results in ventricular dyssynchrony and is associated with a reduction in left ventricular function and an increased risk of heart failure and atrial fibrillation.¹ The AAI(R)-DDD(R) mode switch algorithms were designed to promote intrinsic atrioventricular (AV) conduction and minimize unnecessary RV pacing.

Case report

A 71-year-old man underwent implantation of a dual-chamber pacemaker (REPLY 200 DR, Sorin Group) programmed in SafeR mode (AAI DDD) as treatment for a paroxysmal complete AV block and sinus node dysfunction. Three months later, he experienced several presyncopal episodes.

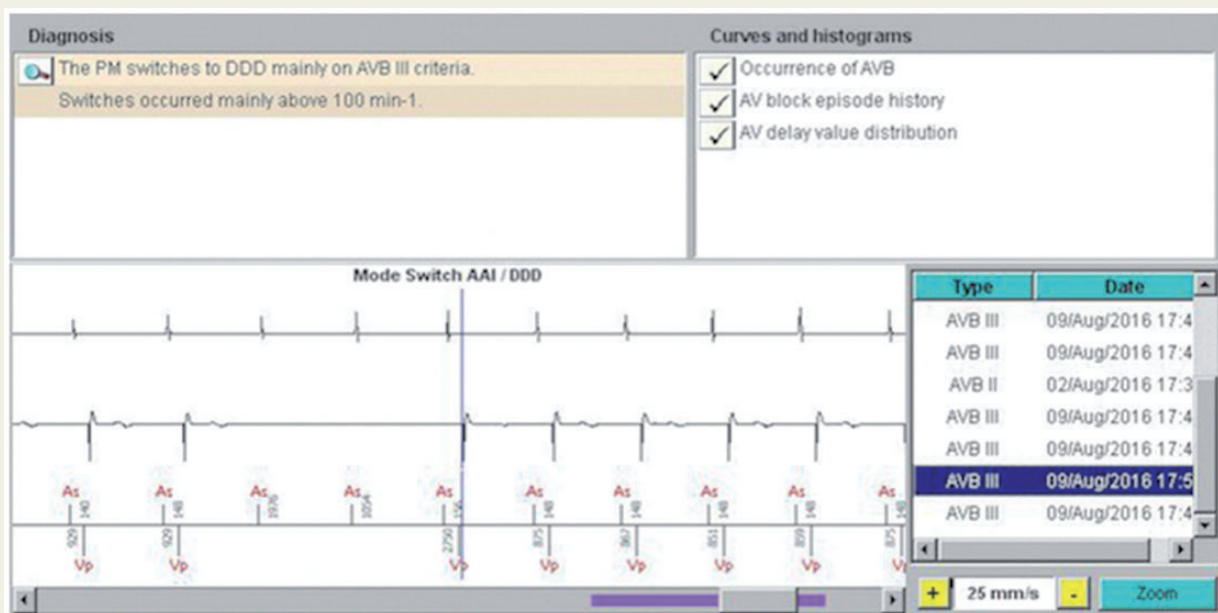


Figure 1 Automatic switch to AAI mode after 100 paced ventricular cycles related to presyncopal symptoms. As the atrioventricular block is still present, the third-degree AVB criterion applies and the algorithm makes the switch to DDD mode.

On arrival to the emergency department, the patient had no symptoms. Laboratory studies and chest X-ray showed no significant findings, and the electrocardiogram revealed sinus rhythm at 58 bpm and a normal PR interval (160 ms) with left anterior fascicular block and complete right bundle branch block, both previously known.

Device interrogation showed how all nine presyncopal episodes coincided with nine checks to detect intrinsic conduction that caused pauses >2.5 s (Figure 1). The pacemaker was adjusted to permanent DDD mode, resolving the symptomatology.

Discussion

The SafeR pacing mode provides AAI pacing while continuously monitoring for AV conduction (ADI mode).² In cases of paroxysmal third-degree AV block, it operates in AAI mode and switches temporarily to DDD after two consecutive blocked atrial events or if the device detects a ventricular pause greater than 2, 3 (nominal setting), or 4 s. While in DDD, SafeR continuously monitors AV conduction and periodically switches back to AAI mode after sensing 12 consecutive spontaneous ventricular events or every 100 paced ventricular cycles. In our patient, the search for intrinsic conduction was associated with the occurrence of presyncopal episodes.

In the event of a sustained AV block, defined as more than 45 episodes within a 24-h period, 15 or more per 24-h period over 3 consecutive days, or more than 50% DDD cycles over a 1-h period, the device will switch to DDD mode for a longer duration. It remains in DDD mode until 8:00 am the next morning unless it detects 12 consecutive spontaneous R waves before that time, in which case it switches to AAI.

This case highlights how the algorithm proposed by Sorin can produce symptoms in some patients because the persistence of complete AV block during the search for intrinsic conduction may cause symptomatic ventricular pauses. In addition to presyncopal episodes, such pauses in the heart rhythm potentially may cause even more serious symptoms as bradycardia-associated ventricular arrhythmia, as documented in previous cases.³ In these patients, it may be necessary to program a shorter (i.e., 2 s) ventricular pause or switch to DDD mode.

Conflict of interest: none declared.

References

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