A Case of Complete Heart Block mimicking 2-to-1 Atrioventricular block: A Diagnostic Challenge

Wipat Phanthawimol
Peerapat Katekangplu
Supalerk Pattanaprichakul
Kasem Ratanasumawong

**Introduction:** A 35-year-old woman without known past medical history experienced her first episode of bradycardia during Cesarean Section. Patient was transferred to cardiac care unit for further evaluation. Initial 12-lead electrocardiogram showed isorhythmic atrioventricular dissociation in 2:1 ratio, atrial rate 110 per minute with ventriculophasic sinus arrhythmia, junctional escape rhythm 55 per minute with narrow QRS complex and corrected QT interval of 549 milliseconds (Figure 1). Two minutes later, PR interval became progressively shortened and P wave was buried in the initial portion of the following QRS complex (Figure 2). His bundle electrogram revealed complete atrioventricular dissociation. A-A and V-V intervals were constant with variable V-A interval. H-V interval was short and fixed. Despite approximation of atrial and ventricular rate in an integral ratio mimicking 2-to-1 atrioventricular block, complete heart block was confirmed and diagnosed on both surface and intracardiac electrograms (Figure 3 and 4). Each of the ventricular signals was preceded by a His bundle deflection and completely dissociated from the atrial signals indicating that the level of block was above the His bundle (Figure 5). Corrected Sinus Node Recovery Time was 98 milliseconds proving normal sinoatrial node function (Figure 6). Eight hours after electrophysiologic study, patient developed pulseless ventricular tachycardia. Nonsustained polymorphic ventricular tachycardia occurred after long pause due to slow junctional escape rhythm with “R on T” phenomenon. It was followed by another pause and initiation of sustained Torsade de pointes in long-short sequence (Figure 7). Pause-dependent afterdepolarization was considered a trigger. QT interval prolongation favoured functional reentry to sustain this episode of ventricular arrhythmia. Sinus rhythm and spontaneous circulation were restored after single 200J biphasic defibrillation attempt. Left and right ventricular structure and function were normal on transthoracic echocardiogram. Dual-chamber permanent pacemaker was successfully implanted on the following day.

**Methods:** N/A

**Result:** N/A

**Conclusion:** N/A