Image in cardiology

Manifest and Concealed Atrioventricular Nodal Double Firing

Doble vía nodular auriculoventricular visible y oculta

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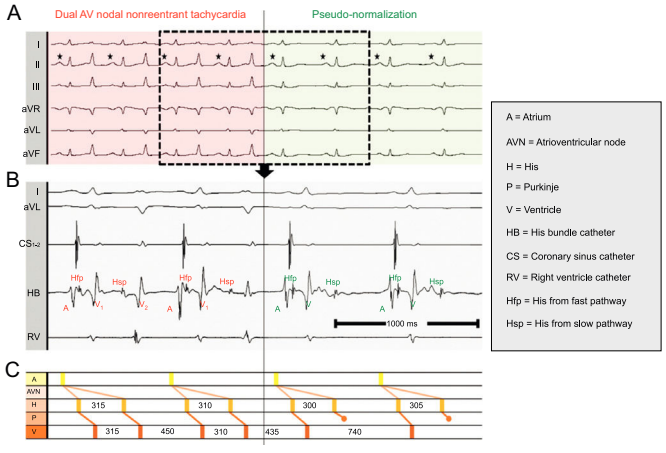

Figure 1.

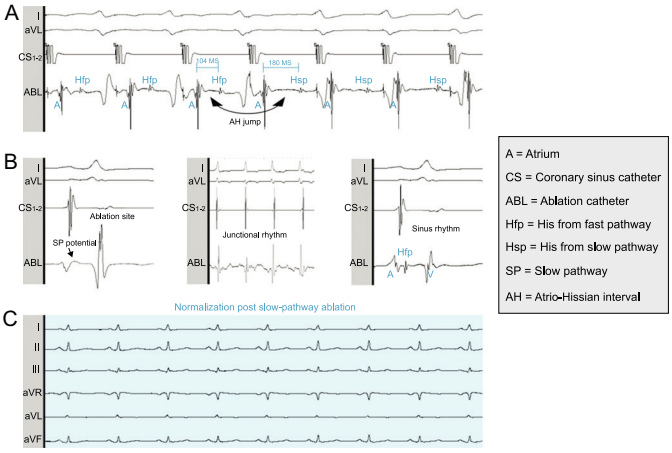

Figure 2.

A 56-year-old man underwent catheter ablation for symptomatic runs of tachycardia, during which surface P-waves (stars) were followed by 2 QRS-complexes (Figure 1A). The electrophysiological study showed dual anterograde conduction of each sinus beat via fast and slow pathways, systematically resulting in 2 His bundle depolarizations (Figure 1B). While double ventricular response was the underlying mechanism of the clinical tachycardia, surface electrocardiogram pseudonormalization occurred when the impulse, carried over the slow pathway, could not reach the ventricles because of His-Purkinje refractoriness, as the interval between His electrogram from fast pathway and slow pathway fell below 310 ms (Figure 1C). This reduced His-Purkinje conduction reserve, reflected by distal block, was prefigured by the slight QRS aberrancy observed in a 2:1 alternans manner, resulting in a regularly irregular QRS pattern.>

Notably, discontinuous atrioventricular conduction was evidenced during atrial incremental pacing, with a clear atrio-Hissian jump followed by 1:1 slow pathway conduction (Figure 2A). Moreover, successful slow pathway ablation (Figure 2B) ensured atrio-Hissian jump elimination and subsequent electrocardiogram normalization (Figure 2C). Hence, His bundle ectopies were definitely excluded as a potential mechanism for these electrophysiological manifestations.

The present case demonstrates that incessant atrioventricular nodal double firing can mimic normal sinus rhythm if there is a temporary infra-Hissian conduction block, confirming that rare variants of dual atrioventricular nodal nonreentrant tachycardia have the potential to result in a mistaken diagnosis. Moreover, our curative strategy increases the emphasis placed on slow pathway ablation as a suitable, simple and efficient treatment for this uncommon tachycardia.

CONFLICTS OF INTEREST

J.P. Albenque is a consultant for St. Jude Medical and Biosense Webster. S. Boveda has received lecture fees as a consultant for Medtronic and Boston Scientific.

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