Differential Diagnosis Between Dual Ventricular Response and Bigeminy Arising From the Bundle of His

Diagnóstico diferencial entre doble respuesta ventricular y extrasistolia hisiana bigeminada

To the Editor,

We have read with attention the scientific letter published by Evertz et al. titled “Dual Ventricular Response: Another Road to Supraventricular Tachycardia in Dual Atrioventricular Nodal Physiology”. As the authors clearly explain, their case concerned a form of supraventricular “pseudotachycardia” in which they established a differential diagnosis involving 2 conditions: atrial tachycardia (quickly ruled out during the electrophysiological study) and bigeminy arising from the bundle of His. The latter diagnosis is not easily differentiated. The authors ruled out premature contractions of the bundle of His due to the consistent relationship of the His and ventricular action potentials to the preceding atrial action potential. However, in the description of the electrocardiographic recordings shown in Figure 1 of their letter, the authors mention certain irregularity of up to 50 ms in the PR2 interval. As they state in the text, the diagnosis of dual nodal physiology was more evident once the dual ventricular response had disappeared following ablation of the slow pathway.

Our group reported a case of frequent extrasystoles arising from the bundle of His in which, as in that described by Evertz et al., the patient had been referred to us with palpitations and supraventricular tachycardia. Our patient showed a wider variability in the H1-H2 interval, which contributed to the presence of a greater number of beats with aberrant conduction and facilitated the differential diagnosis. Moreover, in our case, the presence of blocked P waves and “pseudoblock” of atrioventricular conduction was incompatible with the existence of dual nodal physiology.

By way of this letter, we wish to stress how difficult it is on occasion to differentiate between these two conditions during the diagnostic stage of the electrophysiological study performed prior to ablation. The diagnosis of premature beats arising from the bundle of His can be confirmed using a detailed map of the region of this bundle. Recordings proximal and distal to the bundle of His reveal a reversal of the activation sequence of the bundle during the ectopic beat compared to the sinus beat. Likewise, a recording of the proximal bundle of His may show a shorter HV interval during the premature beat than during sinus rhythm. These two criteria can help to differentiate bigeminy arising from the bundle of His from dual ventricular response. Like many of the diagnostic criteria employed in electrophysiology, their presence increases the likelihood of a clinically relevant condition.

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Available online 18 April 2013

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