

## LETTER TO THE EDITOR

# Yoshimura et al. A-V-V-A response to single atrial premature depolarization in a narrow QRS tachycardia: What is the mechanism?

To the Editor,

I read with great interest the case report by Yoshimura et al. entitled "A-V-V-A response to single atrial premature depolarization in a narrow QRS tachycardia: What is the mechanism?".<sup>1</sup> The authors have discussed a very interesting case and tried to differentiate atypical atrioventricular nodal re-entrant tachycardia (AVNRT) from junctional ectopic tachycardia (JET) based on the available literature.<sup>2</sup> However, discussion seems insufficient to withdraw a definite conclusion.

Firstly, the authors discuss the responses to atrial premature depolarization (APD) delivered during tachycardia based on article published by Padanilam et al.<sup>2</sup> Padanilam et al. described that when a APD is timed to His refractoriness, any perturbation of the subsequent His indicates that impulse travels via anterograde slow pathway conduction and confirms the diagnosis of AVNRT. Timing of APD is very critical, and perturbation of the next tachycardia beat is confirmatory for AVNRT only when the APD could not have influenced the immediate beat. This response seems to be applicable in slow fast type of AVNRT as majority of the patients had short ventricular to high right atrium (V-HRA) interval. V-HRA interval was 80ms in 20 of the 26 cases of AVNRT group, and the interval ranged from 102 to 140ms (mean 121ms) in the remaining six patients. The V-HRA interval in JET group of patients ranged from 15 to 62ms (mean 36ms). Whereas current report describes a case of fast slow type of AVNRT. Hence, approach suggested by Padanilam is not applicable here.

Second argument is based on the fact that the interval between the His-bundle potential before and one beat after APD was significantly longer than that of two beats of tachycardia cycle length ( $300 + 375 \text{ ms} > 320 \text{ ms} \times 2$ ), a finding that is unlikely in JET. On the contrary, it is possible in JET. Enhanced automaticity is postulated as the mechanism of JET<sup>3</sup>; hence, APD can suppress this automatic focus transiently, which can gradually accelerate to tachycardia cycle length (TCL). This is also evident in current case report where HH interval gradually increases ( $375 \text{ msec} \rightarrow 345 \text{ msec} \rightarrow 320 \text{ msec}$ ) post-APD stimulus. This explains why the interval before and one beat after APD is not the exact multiple of TCL.

Although it appears to be AVNRT based on the two discrete discontinuities observed in the AH conduction curve during programmed atrial extrastimulation, manoeuvres described in this case

report appear to be insufficient to conclusively establish the diagnosis of AVNRT. Other manoeuvres such as delta H-A interval (H-A interval pacing minus the H-A tachycardia) and atrial-His-His-atrial response during atrial overdrive pacing of tachycardia might have been helpful.<sup>4,5</sup>

## FUNDING INFORMATION

N/A.

## CONFLICT OF INTEREST STATEMENT

Authors declare no conflict of interests for this article.

## DATA AVAILABILITY STATEMENT

N/A.

## ETHICS STATEMENT

N/A.

## PATIENT CONSENT STATEMENT

N/A.

## CLINICAL TRIAL REGISTRATION

N/A.

## PERMISSION TO REPRODUCE MATERIAL FROM OTHER SOURCES

N/A.

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