Response to Letter by Yamada et al Regarding “Differentiation of Papillary Muscle From Fascicular and Mitral Annular Ventricular Arrhythmias in Patients With and Without Structural Heart Disease”

To the Editor:

We thank Yamada et al1 for their interest in our recent article. We wish to address the points raised by their letter. First, Yamada et al raise concerns about the location of the left anterior fascicle as depicted in Figures 1, 3, and 5. It should be pointed out that Figures 1 and 5 represent purely schematic depictions of the fascicular, papillary, and annular anatomy. To compress 3-dimensional anatomy into a 2-dimensional figure, we arbitrarily placed the left anterior fascicle along the septal aspect of the annular ring. Although the left anterior fascicle courses anteriorly and laterally after branching from the left bundle, we intentionally elected not to mark it along the anterior annulus to avoid overlapping schematic representations of annular foci of ventricular arrhythmias (VAs) (ie, aortomitral continuity or great cardiac vein source) with those of left anterior fascicular VAs. With respect to Figure 3, we agree that blue line marked as left anterior fascicle may have represented a septal fascicle and that the blue line should have been marked more anteriorly and laterally. Of note, however, since Figure 3 was a depiction of a left posterior fascicular ventricular tachycardia, this distinction has no bearing on the results or conclusions of the article.

Finally, Yamada et al1 note that in Figure 5, we depicted a VA arising from the left anterior fascicle displaying a left inferior axis. Yamada et al1 surmise that because the VA exhibited a leftward axis and not an rS pattern in lead I, the arrhythmia would have originated from the posterior not from the anterior fascicle. We disagree because electroanatomic mapping confirmed the anterior source of this specific VA. Typically, a left anterior fascicular VA would display a rightward axis because of an anterolateral exit. However, in this particular case, exit of the VA from left anterior fascicular conduction fibers close to the main left bundle branch along the septum gave rise to a more prominent R wave instead of an rS pattern in lead I.

We think that differentiation of a left anterior from a left posterior fascicular VA source can be challenging, especially given the significant variation in the branching patterns of the left fascicular system as alluded to by Yamada et al2 and supported by anatomic studies.2,3 Without gross anatomic and histological analysis, it is not possible to determine whether a fascicular VA originating from a septal fascicle is a sub-branch of the left anterior fascicle or of the left posterior fascicle. As such, our work focused only on differentiating the fascicular, papillary, and annular VAs from each other and not on differentiating specific subgroups, such as left anterior versus left posterior fascicular VAs.

Disclosures

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References

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