
We thank Sun et al for their interest in our work. We agree that the discrepancy between evidence of conduction delay during pacing (S-QRS interval) and electrogram (eg, late potentials) could be due, in part, to the difference between the field of view of a bipolar recording and the radius of the tissue directly depolarized (virtual electrode) by unipolar pacing at 10 mA. We agree that the characteristics of the catheter used, including electrode size and interelectrode spacing influence this relationship and warrants further study. The relation between electrogram characteristics and the distance of the tissue generating the electrogram cannot be determined during catheter mapping and, therefore, evidence of conduction delay during pacing provides complimentary information to the analysis of the electrograms. Whether radiofrequency application will ablate the myofibers creating the electrogram depends on the size of the radiofrequency lesion relative to the size of virtual pacing electrode and the antenna of the bipolar and unipolar recording. These relations are not completely understood, may vary in scar and normal myocardial tissue and we agree with Sun et al that more work is needed.

We also agree with their second point that high frequency sharp potentials are expected to reflect local activation, and that these may be obscured when they occur simultaneous with far-field signals. Although we did not measure dV/dt, we did see relatively sharp signals at some sites where pacing did not capture. However, the separation of a near-field potential from a far-field by the naked eye is often impossible and we agree that the temporal component analysis used by Sun et al may offer a useful tool in this regard. However, we also feel that implementation of signal processing methods in clinical mapping systems requires improvements in acquisition of high fidelity low amplitude signals. We often encounter sites during mapping where no electrogram above the noise level of the clinical recording system is recorded with an ablation catheter with a 3.5-mm electrode, but pacing captures and shows a long stimulus to QRS interval. These sites would potentially be ignored as likely fibrous scar if pacing was not performed.

Disclosures

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References

Response to Letter Regarding Article, "Electrogram Analysis and Pacing Are Complimentary for Recognition of Abnormal Conduction and Far-Field Potentials During Substrate Mapping of Infarct-Related Ventricular Tachycardia"
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