Simultaneous multi-electrode high-density map using NavX system visualized the mechanism of unusual atrial tachycardia after pulmonary vein isolation

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Summary

A 65-year-old man with palpitation was referred to our centre for catheter ablation due to atrial tachycardia (AT) after pulmonary vein (PV) isolation. NavX system demonstrated that the activation pattern appeared to be ‘focal’ originating from left superior pulmonary vein (LSPV). An activation time of fractionated electrograms recorded by the ring catheter in LSPV indicates maximum 57% (153 ms) of tachycardia cycle length (TCL). Which could be the arrhythmia mechanism? Atrial tachycardia cycle length was 270 ms. However, some electrode pairs from the ring catheter placed in LSPV with fractionated electrograms. Entrainment from any sites within PV demonstrated PPI < 10 ms longer than TCL, while PPI from antral region of left atrium (LA), where prior ablation lesion was placed, is > 50 ms longer than TCL. These findings strongly suggest that the mechanism of AT is ‘re-entry’. A simultaneous multi-electrode high-density map using ring catheter placed in LSPV (mapping points >50 points) clearly could demonstrate the re-entry circuit within LSPV (Figure 1).

This case describes a complete visualization of the mechanism of intra PV tachycardia. The simultaneous multi-electrode high-density map using the NavX system is useful to cure the complex tachyarrhythmia after PVI.

The full-length version of this report can be viewed at: http://www.escardio.org/communities/EHRA/publications/ep-case-reports/Documents/simultaneous-pulmonary-vein-isolation.pdf

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