Noncontact Mapping-Guided Sinus Node Modification for Inappropriate Sinus Tachycardia

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Case 1, 46-year-old female suffered from palpitation and diagnosed as inappropriate sinus tachycardia (IST). Her total heart beats in Holter ECG revealed 12445beats/day despite taking verapamil and metprolol. We performed EnSite multielectrode array-guided electrophysiological study and radiofrequency catheter ablation (RFCA). Baseline heart rate (HR) was 90bpm. HR increased to 140bpm and earliest activation site (EAS) shifted cranially about 25mm by isoproterenol (ISO) infusion. RFCA to EAS was repeated until 15% decrease of HR was achieved from the baseline. At 3months after RFCA, she spent comfortably and her HR was 70bpm without any medication.

Case 2, 55-year-old female with dyspnea and pretibial edema showed total heart beats of 145533beats/day with taking verapamil and carvedilol. Her LVEF was 31% and plasma BNP level was 215pg/ml. Baseline HR was 130bpm and HR increased to 140bpm by ISO infusion. EAS was at posterior side of mid-crista terminalis. After an RFCA at this site, EAS shifted cranially to RA-SVC border, and HR increased to 150bpm. By repeated RFCA to EAS, 30% decrease of HR was achieved from the baseline, and EAS shifted caudally about 26mm. At 6months after RFCA, LVEF improved to 45% and plasma BNP level improved to 34pg/ml. Conclusions: Though clinical manifestations and responses to ISO were variable, noncontact mapping-guided sinus modification may be an effective method to control IST.

Keywords: inappropriate sinus tachycardia, noncontact mapping, sinus node modification