

Radiofrequency Catheter Ablation of Supraventricular Tachycardias in Nepal

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Background

Shahid Gangalal National Heart Center (SGNHC) is the first and the only one facility providing electrophysiological studies (EPS) and radiofrequency catheter ablation (RFCA) for supraventricular tachycardia in Nepal. The first RFCA for SVT in Nepal was performed on 13th October 2003 with Portable EP lab (EP Tracer-Johnson & Johnson). To date, total of 248 RFCA procedures have been performed in SGNHC. The retrospective analysis of this patients population has provided an opportunity to narrate our initial experience regarding baseline characteristics, EP findings, immediate and follow up outcomes and complications.

Methods and Subjects

This study includes 248 subjects with SVT who underwent RFCA in SGNHC in between 13th October, 2003 and 30th March, 2008. The patients' baseline characteristics, EP findings, immediate outcome, follow up outcome and complications were obtained from the hospital registry. Among these 248 subjects, 118 were male (47.6%) and 130 were female (52.4%). The age range was 13° 85 years. The follow up period was from a maximum of 48 months to a minimum of 2 weeks. Before procedure, the AV nodal blocking drugs such as beta-blockers and verapamil were discontinued for at least 5 days and amiodarone for two weeks. The procedures were performed in Cath Lab (Philips 5000 H) using portable EP lab (EP Tracer - Johnson & Johnson). Diagnostic catheters were placed through the right and left femoral veins into RA. Bundle of HIS region and RV apex. A coronary sinus catheter was inserted through the internal jugular vein. Left heart catheterization has performed through femoral artery route or through the trans-septal puncture made via the femoral vein. After the programmed stimulation and electrophysiological maneuver, the reentrant loop of SVT was identified and radiofrequency energy (Stockhart Ablator) applied at the relevant anatomic area. All the patients were discharged the very next day and kept on aspirin and / or clopidogrel for 6 weeks.

Result

Among 248 patients, 100 patients (40.3%) had atrioventricular nodal reentrant tachycardia (AVNRT) with female preponderance (65%). 98 out of 100 patients were typical AVNRT (98%) and 2 were atypical (fast-slow) AVNRT. All 100 patients had undergone RFCA successfully with one relapse during follow-up. 144 patients (58.1%) had accessory pathways, male 80 and female 64. 4 patients had typical atrial flutter.

144 patients had accessory pathways. Among them 89 had manifest W-P-W syndrome (61.8%), while 55 had concealed accessory pathways (38.2%). Left sided pathways were found in 90 patients (62.5%). Right sided pathways were found in 24 patients (16.7%) and the rest were septal pathways. Left lateral accessory pathway was the most common pathway, i.e. 74 patients (51.4% of total pathways and 75% of left sided pathways). Among the right sided pathways, manifest WPW was very common, involving almost 85%, Two thirds of the septal pathways were manifest WPW. 2 patients had Mahaim pathway, and 2 had coronary sinus diverticulum. 6 patients had multiple pathways amongst which 2 had Ebstein's anomaly.

In 2 patients (1%) RFCA was not attempted as they had antero-septal pathways and patients did not give consent due to the risk of heart block. Successful ablation was carried out in 243 (99%) and there was failure in 3 patients (1%) due to technical reasons. Among these 243 successful ablations, tachycardia recurred in 2 cases (1%): one AVNRT and one left posterior accessory pathway. 6 patients had reappearance of delta waves without recurrence of tachycardia. 4 patients with typical atrial flutter had successful ablation. Likewise one had successful ablation for permanent junctional reciprocating tachycardia (PJRT) and one had successful ablation for lone right atrial tachycardia.

In this series, severe vaso-vagal syncope occurred in one elderly woman (needed mechanical ventilation), major hematoma in one (needed surgical intervention), and minor hematoma in 4 and reversible limb ischemia in one patient. There was no event of death, cardiac tamponade, stroke, heart block or malignant arrhythmia requiring DC shock.

Conclusion

In this series, the success rate of RFCA in AVNRT and left sided accessory pathway is very high (more than 99%), where as success rate in right sided and septal pathway is around 90%. Overall, EPS and RFCA procedures can be safely done in our centre with immediate and long term high success rate and minimal complications,