Catheter Ablation of Wolff-Parkinson White Syndrome: 14-year Trends in Utilization and Complications in the United States

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Catheter Ablation of Wolff-Parkinson White Syndrome: 14-year Trends in Utilization and Complications in the United States

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BACKGROUND

The exact prevalence of Wolff-Parkinson White (WPW) syndrome in unknown but it is estimated to be between 0.068-0.17%. The short refractory period of the accessory pathway may result in conduction to the ventricles resulting in rapid ventricular response. This could degenerate in ventricular fibrillation and cause sudden cardiac death with an estimated risk around 0.15% per patient-year. The era of catheter ablation for the treatment of arrhythmias began in 1981 when Dr. Scheinman performed first atrioventricular junction ablation in patient with refractory atrial fibrillation with rapid ventricular response. Since then the art of direct current catheter ablation has advanced over to radiofrequency catheter ablation resulting in increasing number of patients being safely treated for arrhythmias. The radiofrequency catheter ablation for WPW syndrome was introduced in 1987 and since then has become the preferred treatment in patients with WPW with or without tachycardia. Aim of our study was to determine temporal trends in utilization of catheter ablation of WPW syndrome in the United States using a large national database.

MATERIALS & METHODS

We analyzed data from the Healthcare Cost and Utilization Project of the Agency for Healthcare Research and Quality, Rockville, MD from the years 1998–2011. This registry represents up to 8 million hospital stays from 1000 hospitals accounting for 20 % of all inpatient admissions to non-federal hospitals in United States. National estimates are produced using sampling weights provided by National Inpatient Sample (NIS). All patients ≥18 years of age with a primary diagnosis of WPW syndrome International Classification of Diseases, Ninth Edition, Clinical Modification (ICD-9-CM) code 426.7) were included in the study. Patients with supraventricular and ventricular arrhythmias were excluded from the analysis. Patients who underwent catheter ablation were identified using ICD-CM procedure code 37.34. Temporal trends in catheter ablation were analyzed using chi2 test for trend. Census data were used for population estimates in order to calculate time trends in utilization rates. All calculations were carried out using the weighted estimates approximating nationwide population estimates.

RESULTS

Mean age in our study population was 37.3 ± 14.2 years. A total of 211,601 catheter ablations were performed from 1998 to 2011. As seen in the figure 1, the utilization trends of catheter ablation have steadily decreased from 3.04-procedure/million populations in 1998 to 2.24–procedure/million population in 2011 (p trend <0.001). The overall rate of any complications was 4.3%, with cardiac complications in 2.3%, pericardial complications 0.9%, and complete heart block in 1%. There was no vascular complications and in-hospital mortality in our study. We also found that female sex and increase in volume is associated with increased length of stay and procedural complications. The procedure performed at the high volume hospitals (2nd and 3rd tertile) were associated with low burden of morbidity and mortality. Low hospital volume is associated with high burden of morbidity and mortality. High hospital volume is associated with low burden of morbidity and mortality. Low hospital volume is associated with high burden of morbidity and mortality. High hospital volume is associated with low burden of morbidity and mortality.

CONCLUSION

Catheter ablation for WPW syndrome is a relatively safe procedure associated with low burden of morbidity and mortality. Low hospital volume is associated with increased length of stay and procedural complications.