Catheter ablation of accessory pathways is associated with an excellent long-term prognosis

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Since first described in 1989, radiofrequency catheter ablation of accessory pathways has gained rapid and widespread acceptance as a safe and curative treatment for patients with the Wolff-Parkinson-White syndrome and/or paroxysmal supraventricular tachycardia involving a concealed accessory pathway[1]. Catheter ablation of accessory pathways is now considered as first line therapy for the treatment of patients with the Wolff-Parkinson-White syndrome and is considered an alternative to antiarrhythmic therapy for patients with paroxysmal supraventricular tachycardia[2].

The technique, results, and complications associated with radiofrequency catheter ablation of accessory pathways were first described in 1989[3,4]. Calkins and colleagues, using an abbreviated approach to ablation in which a diagnostic electrophysiology test and catheter ablation were performed as a single procedure, reported a 93% acute success rate and a 2% incidence of complications among 56 patients. Jackman and colleagues reported a 99% acute success rate and a 4% incidence of complications among 166 patients. During a mean follow-up of 8 ± 4 months 15 patients (9%) developed recurrence of conduction through their accessory pathway. The recurrence was apparent within 2 months of the ablation procedure in 14 of these 15 patients. Since that time, a number of additional single centre studies have been published which have largely confirmed these findings[5–8]. For example, one series of 250 patients reported a 94% acute efficacy, a 4% incidence of major complications, and an 8% recurrence rate during 10 ± 4 months of follow-up[5]. The recurrences all occurred within 2 months of the ablation procedure. To date, there has been only one prospective multicentre clinical trial of catheter ablation of accessory pathways[9]. Among the 500 patients who underwent catheter ablation of an accessory pathway in this study, the acute success was 93%, the incidence of major complications was 3%, and the incidence of recurrence was 8% at 2 years of follow-up. The median time to recurrence was 35 days (range 0 to 244 days). This study reported a higher likelihood of recurrence among patients with right free wall, posteroseptal, septal, or multiple accessory pathways as well as the presence of multiple accessory pathways. Importantly, each of these studies has also demonstrated that those accessory pathways that recur can be successfully reablated.

In this issue Schläpfer and Fromer[10] report the long-term results of catheter ablation in 180 patients who underwent an initially successful ablation of an accessory pathway. The focus of this paper was to report the long-term follow-up of these patients following catheter ablation. The median follow-up duration in this study (48 months, range 1 to 92 months) is more than twofold longer than that of any prior study. Another unique feature of this study is that patients who developed recurrent symptoms following catheter ablation were categorized into two groups depending on whether their symptoms were similar in quality to those experienced prior to catheter ablation. Of the 180 patients in whom follow-up was available, 142 (79%) remained completely asymptomatic during follow-up. An additional 25 patients (14%) developed symptoms during follow-up which were classified as different from those experienced prior to their ablation procedure. These patients described rare short bouts of palpitations, occurring 2 months or longer after catheter ablation, which lasted a few seconds. None of these patients had evidence of accessory pathway recurrence based on a 12-lead ECG or electrophysiology testing (performed in two patients). Holter monitoring in a subset of these patients revealed short runs of atrial or ventricular premature beats, or sinus rhythm at the time of symptoms. The remaining 13 patients (7%) developed long lasting episodes of palpitations which were described as being similar to those symptoms experienced prior to catheter ablation. These symptoms appeared a median of 3 weeks following ablation (range; 2 weeks to 48 months). Evaluation of these patients with electrophysiology testing (n=9) or noninvasive testing revealed evidence of recurrence of accessory pathway conduction in eight patients, previously undocumented atrioventricular nodal reentrant tachycardia in two, and atrial tachycardia, atrial fibrillation, and atrial flutter in one patient each. Importantly, each of the eight patients who experienced a recurrence of accessory pathway conduction (4%) had recurrent symptoms within 1 month of the ablation procedure (median; 2 weeks). In contrast, those patients with non-accessory pathway mediated arrhythmias during follow-up, experienced their recurrent symptoms considerably later (median
The results of this study represent an important addition to the literature concerning catheter ablation of accessory pathways. In particular, clinicians can use the results of this study when discussing the expected long-term outcome among patients who are considering undergoing catheter ablation for treatment of the Wolff-Parkinson-White syndrome or paroxysmal supraventricular tachycardia. The results of this study, taken together with the results of prior reports, would suggest that the probability of developing a recurrence of symptoms similar to those experienced prior to catheter ablation is under 10%. Symptoms which recur within 3 months following catheter ablation are likely to be related to a recurrence of accessory pathway conduction, whereas those that develop at a later point may be related to the development of other arrhythmias. The results of this study also reveal that an additional subset of patients (14%) develop symptoms unlike those experienced prior to catheter ablation. Importantly, these ‘non-clinical’ symptoms were not linked to recurrence of accessory pathway conduction. The absence of mortality during follow-up in this and prior studies can also be used to reassure patients regarding the long-term safety of catheter ablation of accessory pathways.

Although this study provides important new information regarding the follow-up of patients who undergo catheter ablation of an accessory pathway, other questions remain unanswered. In particular, as this study excluded patients with decrementally conducting accessory pathways we cannot assume that patients with these more uncommon types of accessory pathways will have a similar and low incidence of recurrence following catheter ablation. Another limitation of this study is that young children were not included. The youngest patient was 14 years of age. Thus, the concern regarding the potential for lesion growth which has been observed in infant lambs remains unresolved[1]. I should also note that this study did not report the development of palpitations early following ablation which were dissimilar to the patients’ prior symptoms. These findings differ from my own clinical experience during the past decade. It is my impression that patients very commonly will complain of palpitations, within the first 1 to 2 weeks following their ablation procedure. In fact, I tell my patients to expect them. Patients typically will describe skip beats or extra beats or state that it feels like the tachycardia is trying to start but doesn’t. These types of symptoms are not associated with recurrence. It remains uncertain why the early development of non-clinical arrhythmias following catheter ablation was not detected in this study.

The electrophysiology community appreciates the efforts of Schläfer and Fromer in furthering our knowledge concerning catheter ablation of accessory pathways. At a time when the electrophysiology community is turning its attention to atrial fibrillation, it is reassuring that other unanswered questions in the field of catheter ablation are being addressed.

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References