Radiofrequency catheter ablation of atrioventricular nodal reentrant tachycardia in a patient with dextrocardia

Summary

A 34-year-old male patient with situs inversus and recurrent sustained episodes of palpitations due to atrioventricular nodal reentrant tachycardia underwent successful radiofrequency catheter ablation of the slow pathway without complication. The procedure was performed using single plane fluoroscopy in the antero-posterior projection with simple left-right fluoroscopic image reversal. Radiofrequency ablation of atrioventricular nodal reentrant tachycardia in dextrocardia appears to be feasible and as safe as in normal patients.

Case report

Radiofrequency (RF) catheter ablation of the slow pathway is considered as the method of choice to cure patients with recurrent episodes of supraventricular tachycardia due to atrioventricular nodal reentrant tachycardia (AVNRT). Based on anatomic as well as electrophysiologic markers, RF ablation of the slow pathway is a safe (<0.5% risk of complete atrioventricular block) and effective (success rate >98%) therapy, at least in patients with structurally normal hearts [1, 2]. Dextrocardia is a rare anomaly and RF ablation in this setting has been only rarely reported [3–7].

Introduction

Radiofrequency catheter ablation of the slow pathway is considered as the method of choice to cure patients with recurrent episodes of supraventricular tachycardia due to atrioventricular nodal reentrant tachycardia (AVNRT). Based on anatomic as well as electrophysiologic markers, RF ablation of the slow pathway is a safe (<0.5% risk of complete atrioventricular block) and effective (success rate >98%) therapy, at least in patients with structurally normal hearts [1, 2]. Dextrocardia is a rare anomaly and RF ablation in this setting has been only rarely reported [3–7].

There is no conflict of interest.
slow pathway. Programmed atrial and ventricular stimulation was performed using a Biotronik UHS 20™ stimulator. Multiple surface ECG leads and intracardiac ECGs were continuously monitored and all data were recorded on optic disk using the CardioEP™ software (Prucka Engineering Instrument, Houston, Texas, USA). During sinus rhythm A-H-interval was 100 ms and H-V-interval 48 ms. No ventricular preexcitation was present during incremental atrial pacing and retrograde atrial activation (A’) occurred simultaneously to right ventricular activation (V) with a VA interval of 65 ms.

Discussion

Radiofrequency ablation in patients with dextrocardia has been only rarely reported. Hatala et al. [4] reported successful RF ablation of an incessant atrial tachycardia originating within the inferolateral pulmonary vein. In that case, transoesophageal echocardiography was used in addition to fluoroscopy for catheter guidance during the transseptal puncture and ablation site was identified by activation mapping and by the identification of a fragmented potential in the inferolateral pulmonary vein. Wu et al. [3] reported successful ablation of a reentrant right atrial tachycardia in a patient with dextrocardia and corrected secundum type atrial septal defect. These authors proposed adjustment of biplane fluoroscopy to the RAO 60° and LAO 30° positions to facilitate endocardial mapping. Abe et al. [5] described a case with successful ablation of a left posteroseptal accessory pathway in a patient with dextrocardia using standard fluoroscopic positions (RAO 30°, LAO 45°). Successful RF ablation for AVNRT in a patient with
dextrocardia has been only rarely described [6, 7]. In Reithman’s report, stable contact of the ablation catheter was difficult to obtain, procedure time was long (4–5 hours) as well as radiation exposure (69 min) and many RF applications were necessary for success. However, no rotation of the X-ray picture was used. By simply rotating the fluoroscopic image 180 degrees, positioning of the RF ablation catheter in the present report was easy and allowed the operator to use familiar anatomical landmarks. Because of the abnormal anatomy, the ablation procedure was conducted in a very prudent way using progressive increase of power, progressive ascent of the RF ablation catheter in the low septal region and immediate cessation of RF application in case of rapid junctional rhythm or presence of VA block during junctional rhythm. These considerations may explain the relatively long procedure (135 minutes) or fluoroscopy (46 minutes) times for a slow pathway ablation procedure. We conclude that RF ablation of AVNRT appears feasible and safe in patients with dextrocardia.

References