

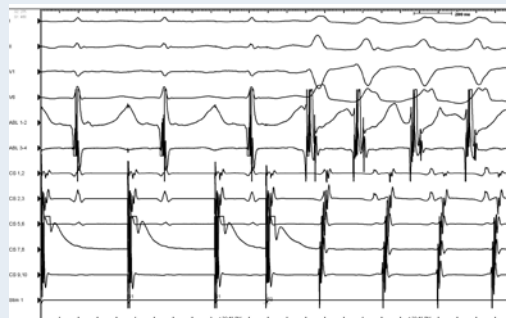
# Successful catheter ablation of Mahaim potential in a patient with wide QRS complex tachycardia

Zabieg przezskórnej ablacji potencjału Mahaima u pacjenta z antydromowym częstoskurczem przedsionkowo-komorowym

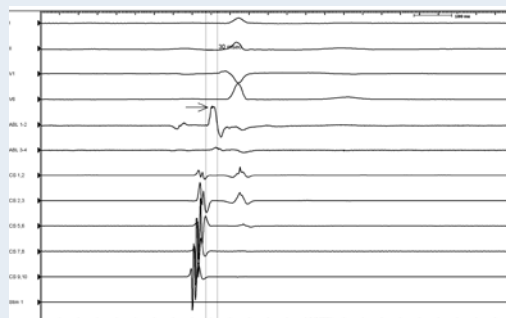
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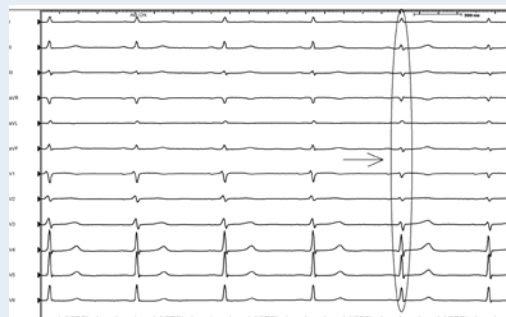
A 70-year-old female with a three-year history of wide QRS complex tachycardia (WCT) underwent an electrophysiological study (EPS). A baseline 12-lead electrocardiogram (ECG) showed normal sinus rhythm (SR) with PR interval of 130 ms, without pre-excitation. In her medical history there was also hypertension. A decapolar catheter was introduced into the coronary sinus (CS) and a quadripolar catheter into the right ventricle (RV). At baseline no tachycardia was induced using programmed atrial and ventricular stimulation and burst stimulation. During programmed atrial stimulation (baseline cycle length [CL] 460 ms, extrastimulus [S2] below 320 ms), QRS complex with left bundle branch block (LBBB) morphology occurred (differential diagnosis: aberrant conduction or atypical accessory pathway). There were no other signs of accessory pathway (AP) conduction. The atrioventricular (AV) node refractory period was 310 ms. After infusion of isoproterenol during atrial incremental pacing and programmed atrial pacing, WCT was induced with CL of 285 ms and with QRS morphology of LBBB (Fig. 1). Tachycardia was easily entrained from CS and from the RV, and there was clear ventriculo-atrial (VA) linkage. During burst atrial pacing conducted, QRS complexes with the same LBBB morphology occurred. The presence of atypical AP with Mahaim physiology was diagnosed based on slight signs of conduction via AP at rest (LBBB morphology during programmed atrial stimulation) and induction of WCT with LBBB morphology after isoproterenol infusion. During mapping on SR in the typical place (lateral side of tricuspid annulus; nine o'clock in the left anterior oblique projection), Mahaim potential (M-potential) was found (Fig. 2). During the radiofrequency (RF) ablation in the third second of application, a slight modification of the QRS morphology was observed (Fig. 3). In EPS after the ablation, the tachycardia was not inducible. The patient remains free of episodes of palpitation and without AV reentrant tachycardia in Holter ECG three months after the procedure. Mahaim fibres occur in 3–5.9% of APs and commonly conduct only in the anterograde direction via the accessory pathway (retrograde conduction is via the AV node). The most effective treatment is ablation of M-potential during activation mapping. The M-potential commonly is defined as a discrete deflection between the atrial and ventricular signal observed during SR, atrial pacing or tachycardia.



**Figure 1.** Induction of tachycardia with morphology of LBBB. Pacing from CS. The basic interval (S1) was 460 ms, extrastimulus (S2) was 260 ms; CS — recordings from CS; Abl — catheter in RV



**Figure 2.** The site of successful RF application with recorded M-potential (arrow) 30 ms before ventricular activation; Abl — ablation catheter; CS — catheter in coronary sinus



**Figure 3.** Modification of QRS morphology (arrow) in fifth QRS complex during successful RF application

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**Conflict of interest:** Edward Koźluk — Medtronic, proctor for PVAC and cryoballoon ablation; others: none declared.