

# Resolution of complete atrioventricular block after typical atrial flutter ablation

Ustąpienie całkowitego bloku przedsionkowo-komorowego  
po ablacji typowego trzepotania przedsionków

Agnieszka Sławuta<sup>1</sup>, Magdalena Sokołowska<sup>2</sup>, Jakub Adamowicz<sup>1</sup>, Jacek Gajek<sup>3</sup>, Dorota Zyśko<sup>4</sup>

<sup>1</sup>Department of Cardiology, Klodzko County Hospital, Klodzko, Poland

<sup>2</sup>Students Scientific Association, Department of Clinical Nursing, Wrocław Medical University, Wrocław, Poland

<sup>3</sup>Department of Clinical Nursing, Wrocław Medical University, Wrocław, Poland

<sup>4</sup>Department of Emergency Medicine, Wrocław Medical University, Wrocław, Poland

## Abstract

A 58-year-old man was admitted with third-degree atrioventricular block and concomitant typical atrial flutter. In such situation the procedure consist of dual-chamber pacemaker implantation followed by cavotricuspid isthmus ablation. In presented case a decision has been made to reverse the order of standard procedures. The radiofrequency ablation of atrial flutter resulted in resolution of complete atrioventricular block and restoration of atrioventricular conduction 1:1, thus the implantation of the dual-chamber pacemaker was not necessary.

Key words: atrial flutter, complete heart block, AFL RF ablation

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## Introduction

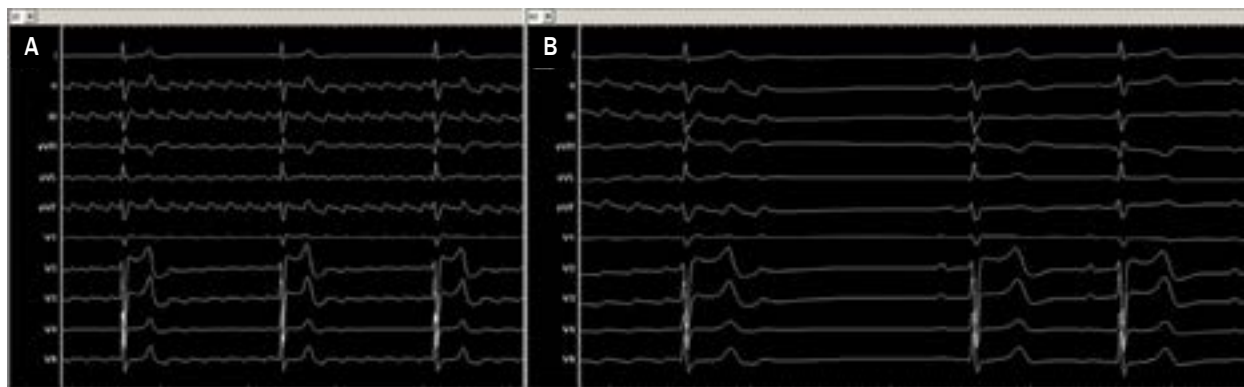
Every manipulation within the atrioventricular (AV) node may result in conduction disturbances including a complete AV block [1]. There are many reports addressing the problem of an iatrogenic AV block during radiofrequency (RF) ablation of AVNRT, para-Hisian accessory pathways, AT or even a typical atrial flutter (AFL) [2–5].

## Case report

We present a case of a 58-year-old man admitted with a typical atrial flutter and the asymptomatic complete AV block of an unknown origin and duration. The patient

did not use any drugs before the admission. The basic biochemical tests including CRP and troponin level were normative. The narrow-QRS escape rhythm rate was 36–44 bpm. The thorough admission ECG analysis of the relations between flutter wave and QRS excluded advanced second degree atrioventricular block with specific AV ratio. The relation of flutter wave and the QRS complexes were changing and the RR intervals remained stable. We considered a dual-chamber pacemaker implantation and a subsequent AFL ablation, which would be the standard procedure recommended by the guidelines [6], but we eventually decided to reverse the course of the procedures. The decision was mostly based on our previous experiences where pacemaker implantation was not a perfect solution

Address of correspondence: dr n. med. Agnieszka Sławuta, Oddział Kardiologii, ZOZ Klodzko, ul. Szpitalna 1a, 57–300, Klodzko, Poland,  
e-mail: aslawuta@tlen.pl



**Figure 1A.** Typical atrial flutter (AFL) with complete (atrioventricular) AV block and narrow-QRS escape rhythm. Tracing speed 25 mm/s; **B.** The AFL termination and sinus node recovery time with 1:1 AV conduction. Tracing speed 40 mm/s

and performed before ablation made the latter technically challenging procedure. The ablation was carried out in a typical manner. The electrophysiology study provided some data on conduction status e.g. HV interval which was within normal limits [7]. The arrhythmia stopped after 9 applications of RF energy (60 s, 60°C, 65W), but to achieve bidirectional cavotricuspid isthmus block another couple of RF energy applications were needed. The tracings of the complete AV block with the escape rhythm during the AFL, and the sinus node recovery with 1:1 AV conduction, were depicted in Figure 1.

## Discussion

Details of a normal AV conduction are not fully understood [8]. One of the unknowns is the decremental conduction, resulting in the Wenckebach periodicity in some types of AV blocks [9]. An increase in the atrial activation rate successively slows the conduction. In the presented case, the restoration of the sinus rhythm stopped the rapid atrial activation which is the atrial “attack” on the AV junction, leading to a normal 1:1 AV conduction. It might be possible that in some patients at a certain atrial rate this

conduction time can be prolonged to such an extent that the subsequent ventricular activation would occur later than a normal junctional escape rhythm. Its manifestation is a complete proximal AV block. Apparently, this was the case in our patient in whom the RF ablation of AFL cured the complete AV block.

Our observation of resolution of the complete AV block after a typical AFL ablation is unique. No report covering this issue can be found in the literature so far. For this reason any discussion might be speculative in nature but thorough clinical assessments of some patients could yield similar outcome. Such findings might encourage avoiding pacemaker implantation in those patients. In our patient the 12-month clinical follow-up did not indicate the need for pacemaker implantation and the serial ECG Holter monitoring revealed only slightly prolonged AV conduction, which disappeared during exertion and some second degree AV block episodes caused by Wenckebach phenomenon during sleep.

## Conflict of interest(s)

None.

## Streszczenie

Pacjenta w wieku 58 lat przyjęto z powodu bloku przedsionkowo-komorowego III stopnia ze współistniejącym typowym trzepotaniem przedsionków (AFL). W takich sytuacjach postępowanie obejmuje implantację dwujamowego stymulatora serca, a następnie ablację AFL. W opisywanym przypadku podjęto decyzję o odwróceniu kolejności powyższych procedur. Po ablacji prądem o wysokiej częstotliwości (RF) AFL obserwowano ustąpienie bloku całkowitego i przywrócenie przewodzenia przedsionkowo-komorowego 1:1, wobec czego implantacja stymulatora serca nie była konieczna.

Słowa kluczowe: trzepotanie przedsionków, blok przedsionkowo-komorowy zupełny, ablacja RF trzepotania przedsionków

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