Atrial fibrillation in a patient with Wolff-Parkinson-White syndrome

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Introduction

The authors describe a case of a Wolff-Parkinson-White syndrome patient experiencing atrial fibrillation, which was difficult to distinguish from ventricular tachycardia.

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Case report

A 54-year-old man walked into the casualty department after experiencing symptoms of light-headedness and palpitations for the past hour. He had a past medical history of occasional palpitations since childhood. He denied any previous collapse or dizzy spells.

He was alert but anxious and sweating. His pulse rate was 280 beats per minute (bpm) and was weak. His blood pressure was 138/70 mmHg, jugular venous pressure was not elevated, heart sounds were normal and his chest was clear.

Investigation

The patient's urea and electrolytes including serum calcium and serum magnesium were normal. Cardiac enzymes were also normal.

A 12-lead electrocardiogram (ECG) (figure 1) revealed atrial fibrillation with a ventricular rate of 300 bpm. The QRS-complexes were wide and bizarre. There were a few narrow QRS-complexes of normal morphology. The ventricular rhythm was totally irregular. Since the QRS-complexes were broad, it was difficult to distinguish from ventricular tachycardia.

The patient was stable in spite of the ventricular rate of 300 bpm but it was decided to carry out electrical cardioversion due to the danger of developing ventricular fibrillation with such a fast ventricular rate.

A 12-lead ECG after cardioversion (figure 2) showed a short PR-interval, a delta wave in leads V3-V6, a tall R-wave in leads V1-V3 and widened QRS-complexes confirming the diagnosis of Wolff-Parkinson-White syndrome, (type A).

Figure 1. The 12-lead electrocardiogram on admission showing wide and bizarre QRS-complexes. The arrows show QRS-complexes of normal nephrology

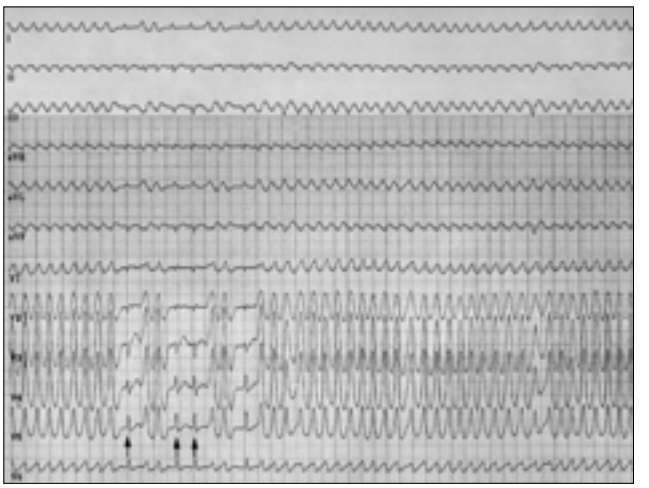
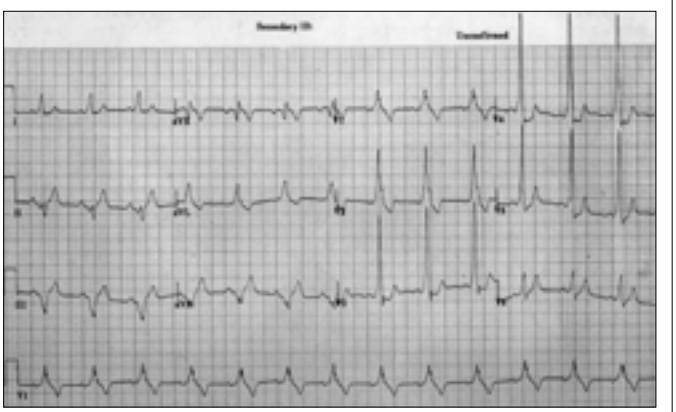


Figure 2. The 12-lead electrocardiogram after electrical cardioversion confirming Wolff-Parkinson-White syndrome



Discussion

During atrial fibrillation most conducted impulses reach the

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Key messages

- Broad QRS-complexes on an electrocardiogram of a patient with Wolff-Parkinson-White syndrome can make atrial fibrillation difficult to distinguish from ventricular tachycardia
- An electrocardiogram with a total irregularity of rhythm in such patients is the hallmark of atrial fibrillation

ventricles via the accessory pathway. As a result, the ventricular complexes are broad due to the presence of large delta waves and aberrant conduction due to the fast rate. A minority of impulses reach the ventricles via the atrioventricular node producing normal QRS complexes. The resultant ECG, therefore, shows a total irregularity of the rhythm which is the hallmark of atrial fibrillation. This feature helps to differentiate it from ventricular tachycardia.