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RHYTHM PUZZLE - ANSWER

Recurrent syncope: a slow heart rate?

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Answer to the rhythm puzzle

The ECG shows a total atrioventricular block with junctional escape complexes, although the ninth QRS complex may be conducted. The second and eighth QRS complexes result from a retrogradely conducted P wave (Fig. 2). This mechanism, in which an escape complex is followed by a conducted complex, is called an escape-capture bigeminy. This only happens if the R-P interval of the retrograde P wave is long enough (along the slow AV nodal pathway) to be conducted back to the ventricles along the fast AV nodal pathway. When the P wave is caused by retrograde conduction along the fast AV nodal pathway, anterograde AV nodal conduction is blocked, resulting in a blocked P wave (after the third, fifth and (probably) tenth QRS complex).

Fig. 2 Ladder diagram of a retrograde P wave conducted back to the ventricles and a blocked retrograde P wave

Lithium intoxication was diagnosed based on the clinical symptoms (sinus node dysfunction and lethargy) and on a serum level of 0.88 mmol/l which is considered to be toxic at this age.

Since lithium treatment was considered to be the most beneficial therapy for this patient, a DDD pacemaker was implanted. This was done successfully and without any complications, after which she was discharged from our centre.

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