

# Profound first-degree atrioventricular block

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## DESCRIPTION

We present a case of profound first-degree heart block with the longest reported PR interval (640 ms). The aetiology of extreme first-degree block in our case was multifactorial, due to senile conductive system fibrosis, hypothermia and digoxin therapy.

A woman in her 90s presented with syncopal episodes secondary to bradycardia. She was mildly hypothermic and her only rate-limiting medication was low-dose digoxin (62.5 µg once daily).

She had a medical history of severe ischaemic left ventricular systolic dysfunction and hypertension.

Investigations revealed acute kidney injury with a serum digoxin level of 1.8 ng/mL. Her electrolytes were normal and she was not hypothyroid.

The 12 Lead ECG (figure 1) revealed bradycardia (54 bpm), slow and irregular P wave frequency due to sinus node disease, profound first-degree heart block of 640 ms, broad left bundle branch block with leftward axis deviation. P waves occasionally concealed in preceding QRS complex.

She was rewarmed, fluid resuscitated and digoxin withheld. The PR interval recovered significantly to 300 ms and she did not proceed to a pacemaker. She was readmitted a few weeks later with pneumonia and unfortunately she passed away.

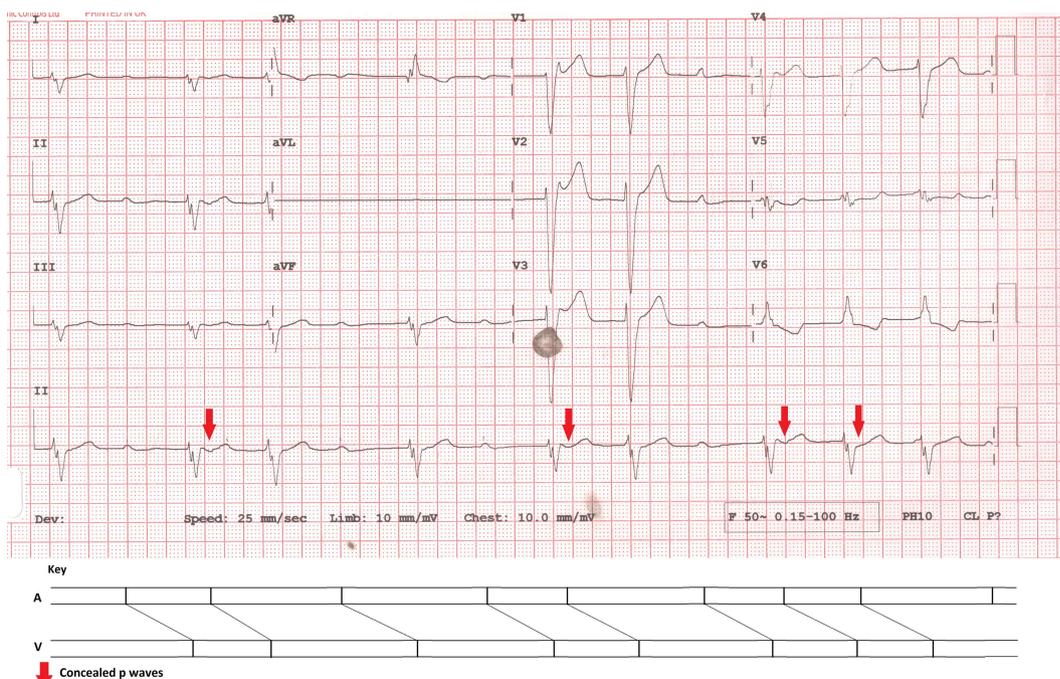
First-degree heart block is due to delayed conduction from the sinus node through to the atrioventricular node. It occurs in healthy athletes as well as in diseased hearts and is the most common conduction disturbance (prevalence of 1.1%).

Markedly prolonged PR interval may result in symptoms of pacemaker syndrome<sup>1</sup> and reduced exercise tolerance. Syncope may result from transient high-degree atrioventricular block.

A prospective cohort study<sup>2</sup> found that individuals with PR prolongation had increased risks of atrial fibrillation and all-cause mortality.

## Learning points

- ▶ First-degree heart block is due to delayed conduction from the sinus node through to the atrioventricular node.
- ▶ It occurs in healthy athletes as well as in diseased hearts and is the most common conduction disturbance (prevalence of 1.1%).
- ▶ Syncope may result from transient high-degree atrioventricular block.
- ▶ Second-degree type 1 sino-atrial block is a very similar condition often missed because of minimal clinical significance.



**Figure 1** Demonstrating bradycardia (54 bpm), slow and irregular P wave frequency due to sinus node disease, profound first-degree heart block of 640 ms, broad left bundle branch block with leftward axis deviation. P waves occasionally concealed in preceding QRS complex (indicated by red arrows).

**To cite:** Akhtar W, Rathod KS, Alexander J, et al. *BMJ Case Rep* Published online: [please include Day Month Year] doi:10.1136/bcr-2013-010474

**Contributors** WA drafted the first manuscript. JA edited the draft. FF and KSR came up with the original concept and edited the manuscript.

**Competing interests** None.

**Patient consent** Obtained.

**Provenance and peer review** Not commissioned; externally peer reviewed.

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