

## SHORT CASES IN CARDIOLOGY

## Exertional atrioventricular block presenting with recurrent syncope: successful treatment by coronary angioplasty

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Exercise induced atrioventricular block is usually attributed to primary conduction tissue disease.<sup>1-3</sup> However, its occurrence in patients with angina indicates that, in some cases, it may also be the result of coronary artery disease.<sup>4</sup> Exactly how common this is is not clear but the diagnosis is important because, if the atrioventricular block is symptomatic, revascularisation may produce complete relief.

A 67 year old woman presented with a six month history of intermittent syncope and presyncope. Initially symptoms were related only to exertion but latterly had occurred both on exertion and at rest. By the time of referral she was experiencing symptoms three to four times each day with loss of consciousness up to three times a week. She had never had chest pain or other cardiovascular symptoms and physical examination was normal. The resting electrocardiogram was normal. Holter monitoring, however, recorded episodes of Mobitz type I atrioventricular block preceded on each occasion by ST depression of at least 3 mm below the isoelectric line (figure). Based on these findings coronary angiography was undertaken. This showed single vessel coro-

nary artery disease with a critical stenosis in the middle segment of the right coronary artery. Percutaneous balloon angioplasty of the lesion was successful. On review three months later the patient reported complete resolution of her previously disabling symptoms.

Exercise induced atrioventricular block seems to be an unusual finding. In a series of 888 exercise tests that were specifically analysed for evidence of arrhythmias eight cases of reversible bundle branch block were found but none of the higher degrees of atrioventricular block.<sup>5</sup> Seven of these eight cases had evidence of underlying cardiac disease. Higher degrees of exercise related atrioventricular block have usually been attributed to degeneration of primary conduction tissue.<sup>1-3</sup> In most of these cases the conduction defect has been below the atrioventricular node in the His-Purkinje system. In one case included in the above reports a 90% right coronary artery stenosis was found but this was regarded as coincidental and the patient was treated with permanent pacing rather than revascularisation.<sup>1</sup>

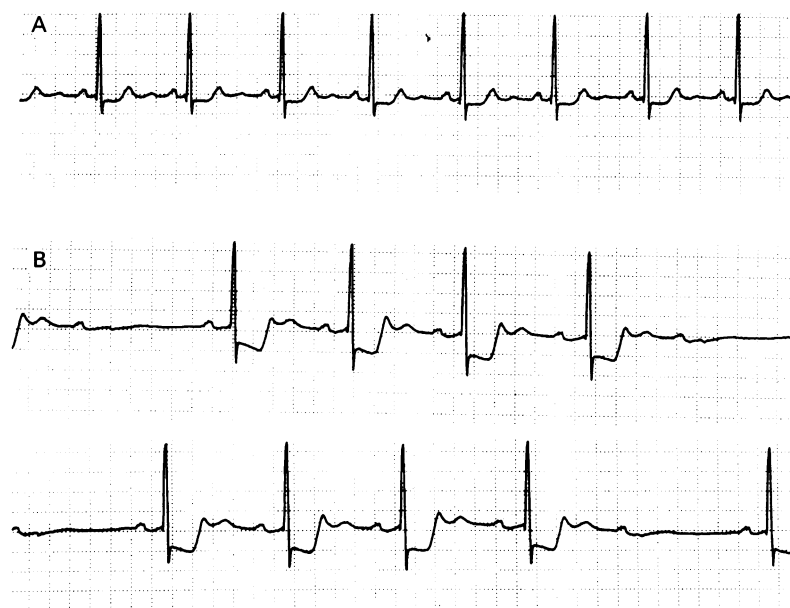
Reversible ischaemia has been associated with varying degrees of atrioventricular block in patients with documented coronary artery spasm.<sup>6</sup> One case has been reported of a patient with angina and exertional atrioventricular block in whom angiography showed a right coronary stenosis which was treated by angioplasty.<sup>1</sup> Our patient had experienced no chest pain but presented with disabling syncopal attacks which were most likely the result of intermittent ischaemia in the territory of the right coronary artery resulting in reversible heart block at the level of the atrioventricular node. Thus the symptoms were usually exercise related: the Holter recording confirmed profound ST depression preceding episodes of heart block and coronary angioplasty provided complete symptomatic relief. The Holter findings point strongly to ischaemic atrioventricular block rather than tachyarrhythmia as the cause of the syncopal episodes but tachyarrhythmia cannot be excluded because the patient remained symptom free during the recording. Had the ST depression not been demonstrated on the Holter recording this patient would have been referred for permanent pacing rather than coronary arteriography. Pacing would, no doubt, have corrected her

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Holter recording showing baseline electrocardiogram with normal atrioventricular conduction (A) and an episode of atrioventricular block associated with ST depression (B).

symptoms but the choice of angioplasty avoided the inconvenience (and expense) of follow up in a pacemaker clinic and may have reduced the risk of a potentially serious ischaemic event.

This case shows that in patients with coronary artery disease, ischaemic episodes may result in intermittent atrioventricular nodal block with syncope. The diagnosis, however, seems to be rare but should be considered when symptoms are exercise induced or when heart block is associated with ischaemic ST depression on Holter recordings.

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