

SHORT CASES IN CARDIOLOGY

Post-exercise vasospastic angina in a patient with normal coronary arteries: presentation and follow up of an unusual case of variant angina

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A 31 year old man with risk factors for coronary artery disease was referred because of attacks of chest pain after exercise. Fifteen minutes after completing an exercise test he experienced angina and dizziness. The electrocardiogram showed second degree atrioventricular block and signs of transmural ischaemia in the inferior leads and V1 (fig 1). After glyceryl trinitrate and nifedipine were given the pain subsided and the electrocardiogram became normal. Angiography showed normal coronary arteries. However, exercise induced a spasm of the proximal part of the right coronary artery causing a luminal narrowing of at least 70% (fig 2A). Treatment for vasospastic angina with vasodilators was started.

After nine years, during which disease activity completely disappeared, progressive exercise-induced angina developed. Coronary angiography then showed an isolated fixed subtotal stenosis in the right coronary artery at the same site as the previously documented vasospasm (fig 2B).

There is evidence that in patients with variant angina vasospasm is caused by hyperreactivity of the vascular smooth muscle rather than by endothelial dysfunction.¹ However, selective endothelial dysfunction, causing coronary vasoconstriction, may occur in patients with risk factors for coronary artery disease even without the presence of measurable atherosclerosis.^{2,3} We believe that in our patient the vasospastic reac-

tion was due to a lack of control of endothelium-dependent tone in combination with vessel wall hyperreactivity. This suggestion is supported by the subsequent development of a fixed stenosis at the site of the previous vasospasm.

- 1 Egashira K, Inou T, Yamada A, Hirooka Y, Taheshita A. Preserved endothelium-dependent vasodilation at the vasospastic site in patients with variant angina. *J Clin Invest* 1992;89:1047-52.
- 2 Vita JA, Treasure CB, Nabel EG, et al. Coronary vasomotor response to acetylcholine relates to risk factors for coronary artery disease. *Circulation* 1990;81:491-7.
- 3 Zeiher AM, Drexler H, Wollschläger H, Just H. Modulation of coronary vasomotor tone in humans. *Circulation* 1991;83:391-401.

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Accepted for publication
15 November 1995

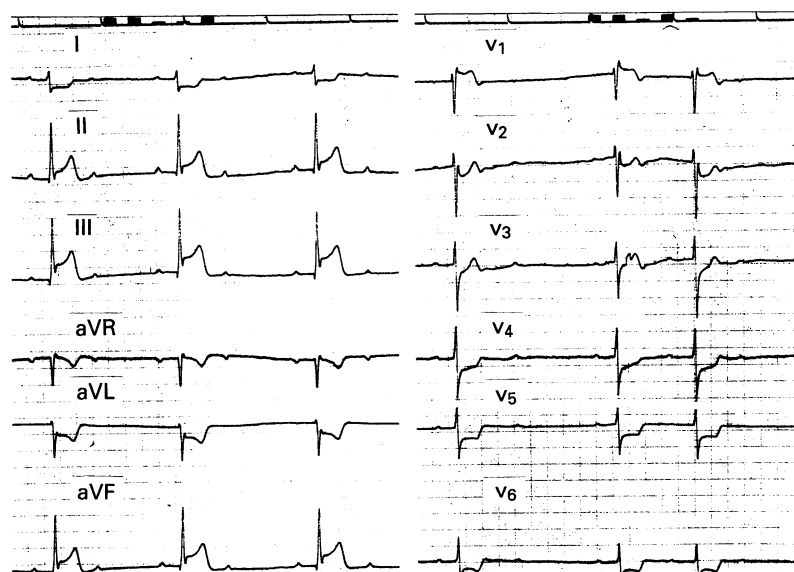


Figure 1 A 12 lead electrocardiogram obtained 15 minutes after exercise showing a second degree atrioventricular block and ST segment elevation in leads II, III, aVF and V1 and reciprocal ST segment depression in leads I, aVL, and V3 to V6 (paperspeed 25 mm/s).

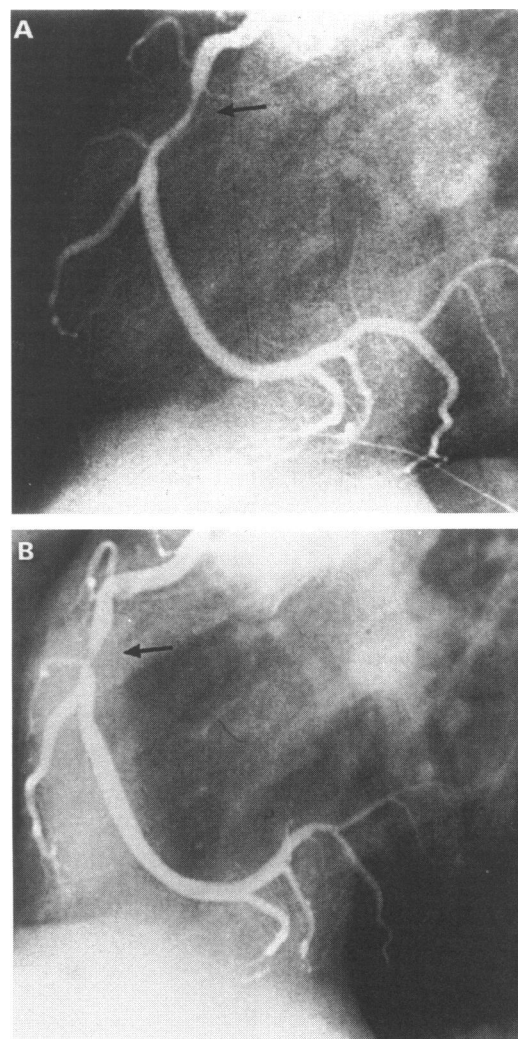


Figure 2 Coronary angiography (left anterior oblique view) showing exercise-induced spasm in the proximal part of the right coronary artery (A) and a fixed stenosis in the same segment nine years later (B).