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International Journal of Cardiology 74 (2000) 249–251

International Journal of
Cardiology

www.elsevier.com/locate/ijcard

Letter to the Editor

Coronary stent occlusion following strenuous exertion: is the risk actual? Is it preventable?

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Received 25 April 2000; accepted 2 May 2000

Early exertion reconditioning after myocardial infarction (MI) is known to improve both the patient's life expectancy [1] and quality of life.

However, although management of MI is increasingly based on coronary angioplasty performed during the acute phase (most often with concomitant implantation of a coronary stent), the guidelines [2] do not definitely address those patients undergoing such procedures. We report two cases of acute coronary occlusion immediately after strenuous physical exertion, within 15 days of the device placement, despite a potent antiplatelet therapy (ticlopidine plus aspirin). An attempt to draw practical implications is made.

A 40-year old man underwent reopening angioplasty of the left anterior descending artery (LAD) 4 days after an anterior MI, with implantation of a 3 mm diameter stent. Eleven days later, he was subjected to an exercise tolerance test on ergometric bicycle while on treatment with ticlopidine, aspirin and atenolol, the workload level being brought up to 150 W by increments of 30 W/3 min. Heart rate reached 120 beats/min, the test resulted negative. Half an hour later, the patient developed typical chest pain. The coronary angiography performed in an emergency showed occlusion of the LAD by a thrombus inside the stent (Fig. 1). A reopening angioplasty was

performed 2 h after onset of the chest pain (Fig. 2). Clinical outcome was favourable.

A 36-year old man underwent angioplasty of the right coronary artery during the acute phase of a MI, with combined placement of a coronary endoprosthesis. On Day 15, the patient experienced sustained chest pain half an hour after a 45 mm bicycle ride reported as exhausting. A coronary angiography was performed, showing complete thrombosis of the right coronary artery inside the stent. Clinical outcome was favourable after right coronary desobstruction.

Stent occlusion during exertion is facilitated by two factors, the first one is the presence of a foreign body. The estimated thrombosis risk directly resulting from the stent implantation is 1–2% during the first month, despite effective antiplatelet therapy with ticlopidine plus aspirin [3]. On the other hand, sedentary individuals, even with healthy coronary arteries, are known to incur a higher risk of MI when strenuous physical activities are performed [4]. Numerous mechanisms have been suggested: stimulation of platelet aggregation, coronary spasm during recovery and disruption of a vulnerable atherosclerotic plaque. Such events appear to be scarce: one single case report of post-exertion stent occlusion has been published [5], but the patient was treated by coumadin. This has to be brought into perspective with the hundred of thousands stents implanted yearly.

In order to avoid acute stent thrombosis associated

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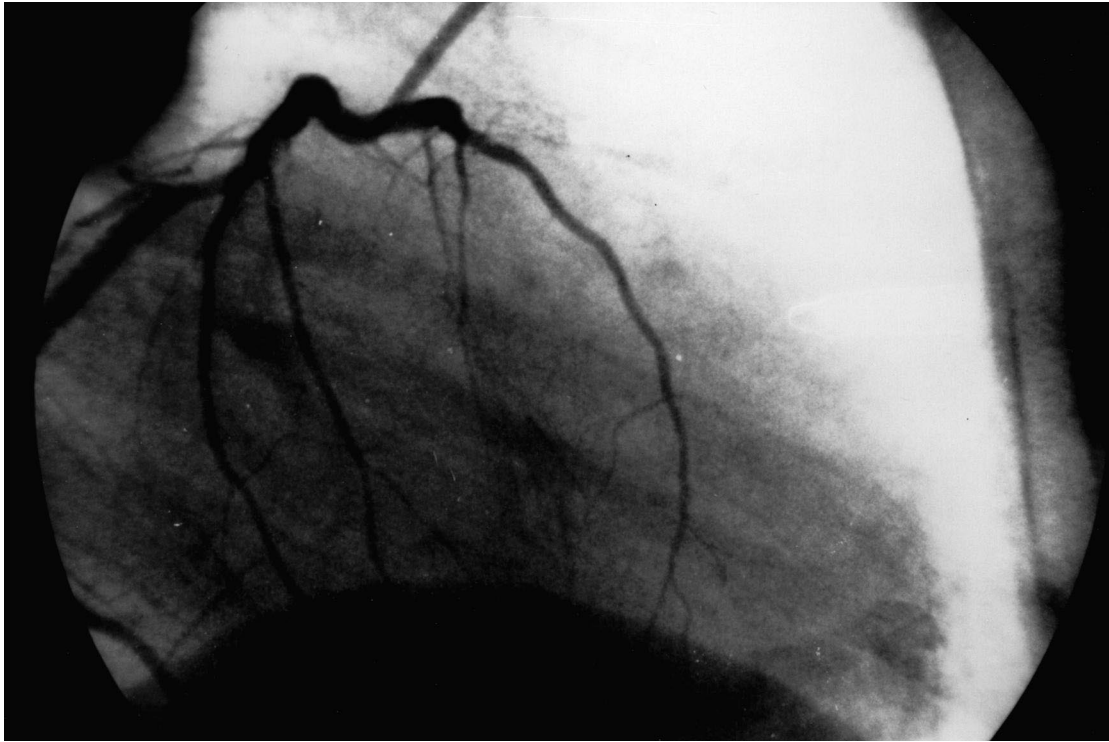


Fig. 1. Left Anterior Descending artery occlusion inside the stent.

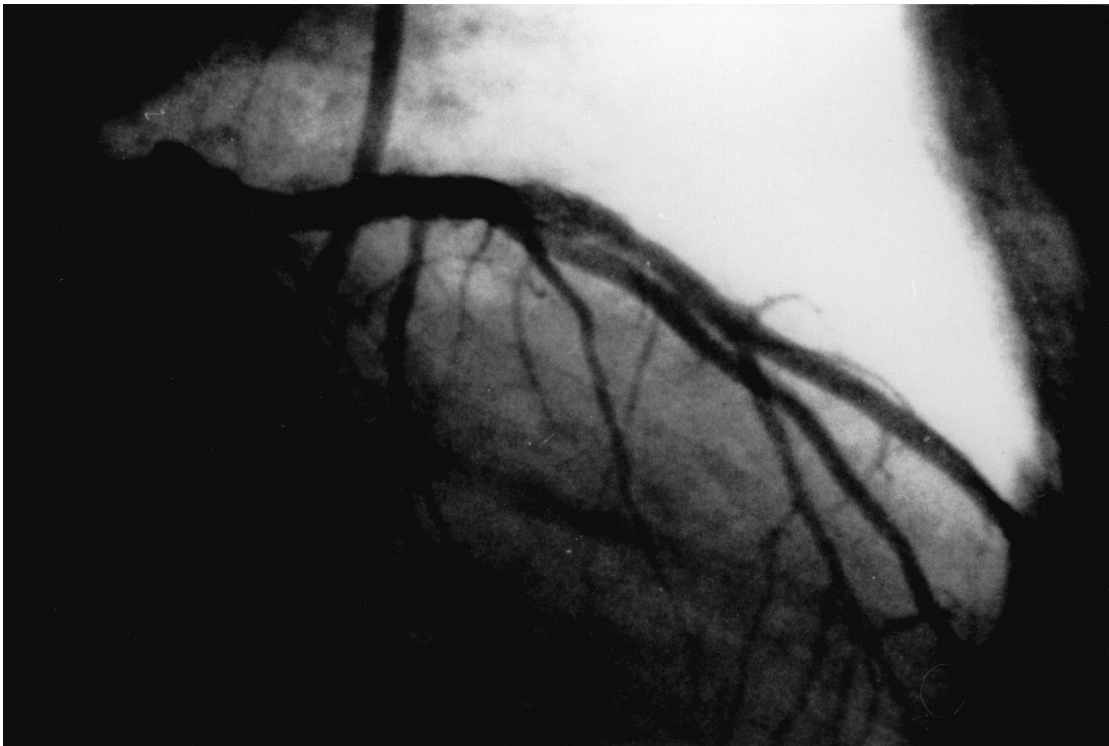


Fig. 2. After stent desobstruction.

with exercise, we think that during a cardiac rehabilitation program, the first exercise test must be only submaximal. Following this test, patients can start an exertion reconditioning program, which is more gradual since training heart rate is derived from the results of this submaximum exercise tolerance test. By the end of the first month, intensive physical activities may be considered, along with maximum exercise tolerance testing.

Cardiac rehabilitation was undertaken in 210 patients, with those precautionary measures as stated above then being duly taken. No stent occlusions were observed. The results from this small register are encouraging and support the fact that increasing levels of habitual physical activity lowers the risk of thrombotic event [4].

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