

Clinical note

Acute stent thrombosis and reverse transient left ventricular dilatation after performing a single-photon emission computed tomography myocardial perfusion[☆]B. Miranda^{a,*}, M.N. Pizzi^a, S. Agudé-Bruix^b, E. Domingo^a, J. Candell-Riera^a^a Servicio de Cardiología, Hospital Universitari Vall d'Hebron, Barcelona, Spain^b Servicio de Medicina Nuclear, Hospital Universitari Vall d'Hebron, Barcelona, Spain

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ABSTRACT

A 63-year-old male patient with a history of stent implantation in the left anterior descending artery three months before is presented. Due to the onset of vegetative symptoms, he was referred for gated-SPECT myocardial perfusion. During acquisition of the resting images he presented chest pain and ST segment elevation, so that urgent coronary angiography was performed, showing stent thrombosis. Rest perfusion imaging showed anterior and apical perfusion defects, more severe and extensive than in the stress images, with striking left ventricular dilatation and a fall in the ejection fraction related to the acute ischemia phenomenon. Intense exercise is associated with a transient activation of the coagulation system and hemodynamic changes that might induce thrombosis, especially in recently implanted coronary stents that probably still have not become completely endothelialized.

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Trombosis aguda de stent y dilatación transitoria ventricular izquierda inversa tras la realización de una tomografía computarizada de emisión monofotónica de esfuerzo

RESUMEN

Paciente de 63 años con antecedentes de implantación de un stent en la descendente anterior 3 meses antes. Se le practicó una gated-SPECT de perfusión miocárdica de esfuerzo al presentar síntomas vegetativos. Durante la adquisición de las imágenes de reposo presentó dolor precordial y elevación del segmento ST por lo que se realizó un cateterismo cardiaco urgente que evidenció una trombosis aguda intra-stent. Las imágenes de perfusión correspondientes al reposo demostraron un defecto de perfusión anterior y apical, más intenso y extenso que en las imágenes de esfuerzo, con una llamativa dilatación ventricular izquierda y caída de la fracción de eyección, en relación con el fenómeno de isquemia aguda. El ejercicio intenso se asocia con una activación transitoria del sistema de coagulación y cambios hemodinámicos que pueden inducir trombosis, especialmente en stents coronarios recientemente implantados y probablemente no completamente endotelizados.

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Palabras clave:

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Perfusión miocárdica

Cardiopatía isquémica

Introduction

To perform an exercise gated SPECT in patients with a history of percutaneous revascularization and clinical symptoms is considered an appropriate indication of this technique. The safety of performing this procedure soon after the implantation of a stent is not well established, and there are some reports published regarding acute stent thrombosis after performing a stress test.

Case

A 63-year-old patient, former smoker, hypertensive, dyslipemic, with previous acute myocardial infarction was treated with primary angioplasty and conventional stent in the left anterior descending artery (LAD), with a good angiographic outcome was treated. The catheterization also showed moderate injuries in the proximal LAD and circumflex artery, and post-infarction ventricular function was slightly depressed. Three months after infarction a gated-SPECT myocardial perfusion stress was carried out because he complained of nausea and occasional aerophagia unrelated to efforts without chest pain. The baseline ECG showed a pattern of anterior necrosis (Fig. 1A). The patient reached 85% of the theoretical maximum heart rate for his age and 8.5 METs, with an appropriate increase in blood pressure, without presenting symptoms or significant electrocardiographic abnormalities. Scintigraphic images were acquired after the stress

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* Corresponding author.

E-mail address: b2rt1@hotmail.com (B. Miranda).



Fig. 1. Baseline ECG shows QS and negative T waves in V₁ to V₃, III, and aVF. (A) Post-effort ECG, with chest pain, shows ST segment elevation in V₁ to V₃ and pseudonormalization of T-waves (B).

and 30 min later, during the acquisition of the resting images, the patient presented mild chest pain, that he did not refer. After acquisition of images, the pain intensified and the patient vomited. In that moment, ECG showed elevation of the ST segment in V₁ to V₃, up to 3 mm, and pseudonormalization of T waves in the inferior wall (Fig. 1B). Aspirin (300 mg) and sublingual nitrates were administered without decrease of pain and with persistent electrocardiographic changes. Then, 600 mg of clopidogrel was indicated and an emergency coronary angiography was performed that showed an acute intra-stent thrombotic occlusion (Fig. 2A). The intravascular ultrasound images showed a significant focal thrombosis with stent stenosis. Thrombectomy was performed, intracoronary abciximab was administered and a drug-eluting stent was implanted, with an optimal result (TIMI

3) (Fig. 2B). In the images of the gated SPECT a perfusion defect was observed in the anterior and apical regions, more severe and extensive in the resting images, with a greater dilatation of the left ventricular cavity at rest than during stress, suggestive of left ventricular dilatation during the phenomenon of acute ischemia at rest (Fig. 3). The functional analysis showed a left ventricle ejection fraction (LVEF) of 58% with an end diastolic volume (EDV) of 107 ml and an end systolic volume (ESV) of 45 ml in the images corresponding to the effort. In the resting images a fall in LVEF (45%) and an increase of the ventricular volumes (EDV: 120 ml and ESV: 65 ml), with an inverse TID (Transient Ischemic Dilatation) of 0.79 (78/98) (Fig. 4), were documented.

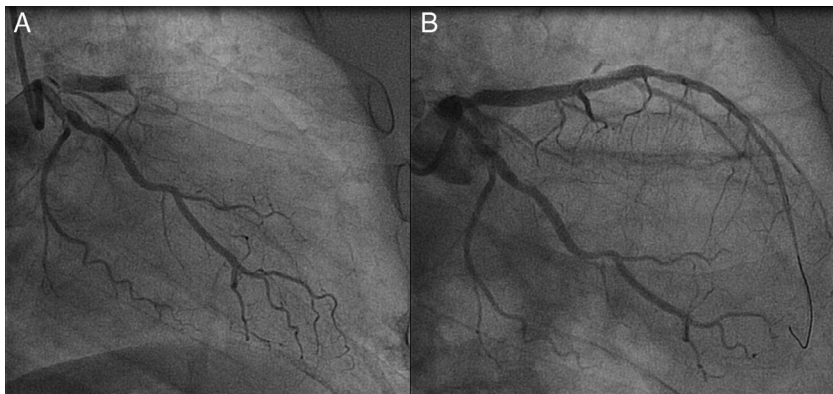


Fig. 2. Emergent coronary angiography showing acute intra-stent thrombosis in the left anterior descending artery (A) and the post-angioplasty result (B).

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