International Journal of Cardiology 112 (2006) e1 – e4

International Journal of Cardiology

www.elsevier.com/locate/ijcard

Letter to the Editor

ST elevation during treadmill exercise test in a young patient with slow coronary flow: A case report and review of literature

Turgay Celik [a,*], Atila Iyisoy [a], Hurkan Kursaklioglu [a], Cagdas Yuksel [a]
Hasan Turhan [b], Ersoy Isik [a]

[a] *Gulhane Military Medical Academy, School of Medicine, Department of Cardiology, 06018 Etlik-Ankara, Turkey*
[b] *Inonu University, School of Medicine, Department of Cardiology, Malatya, Turkey*

Received 4 December 2005; accepted 27 January 2006
Available online 12 June 2006

Abstract

The coronary slow flow phenomenon is an angiographic curiosity characterized by delayed distal vessel opacification provided that the presence of significant epicardial coronary disease is excluded. Slow flow phenomenon in epicardial coronary arteries is not infrequent finding during routine coronary angiography. However, the clinical features of patients with slow flow phenomenon have not been extensively studied. ST elevation in leads without Q waves during exercise testing has not been previously reported in patients with slow flow phenomenon. In the current case, we report a 29-year-old man with angiographically normal coronary arteries associated with slow coronary flow in the absence of any significant obstructive coronary artery disease and no evidence of epicardial coronary artery spasm in whom ST segment elevation in leads I and aVL was observed at maximal exercise of treadmill test.

Keywords: Slow coronary flow; Normal coronary artery; ST elevation; Exercise ECG

1. Introduction

Slow flow of dye in epicardial coronary arteries was first defined by Tambe et al. [1] and after that time limited number of studies regarding the etiology, clinical manifestations and treatment of this phenomenon have been published till now. The association of slow flow with angina pectoris and acute myocardial infarction have been previously described [2,3]. More importantly, Amasyali et al. reported a case of aborted sudden death due to malignant ventricular fibrillation who had slow coronary flow in all coronary arteries [4]. ST elevation in leads without Q waves occurs in only 1 of 1000 patients seen in a typical exercise laboratory [5]. As far as we know, ST elevation in leads without Q waves during exercise ECG has not been previously reported in patients with slow flow phenomenon. In the current case, we report a 29-year-old man with angiographically normal coronary arteries associated with slow coronary flow in the absence of any significant obstructive coronary artery disease and no evidence of epicardial coronary artery spasm in whom ST segment elevation in leads of I and aVL was observed at maximal exercise of treadmill test.

2. Case report

A 29-year-old man was admitted to outpatient cardiology clinics with typical chest pain on exertion (NYHA Class-II) continuing for 6 months. Anginal attacks of the patient tend to be not clustered in the mornings and not associated with any syncopal event. Also, anginal discomfort defined by the patient was not extremely severe. He had a positive family history of premature coronary artery disease and history of hypercholesterolemia which has been well controlled with statins. He was normotensive, nondiabetic and his physical

* Corresponding author. Tel.: +90 312 3044268; fax: +90 312 3044250.
E-mail address: benturgay@yahoo.com (T. Celik).

0167-5273/$ - see front matter © 2006 Elsevier Ireland Ltd. All rights reserved.
doi:10.1016/j.ijcard.2006.01.053

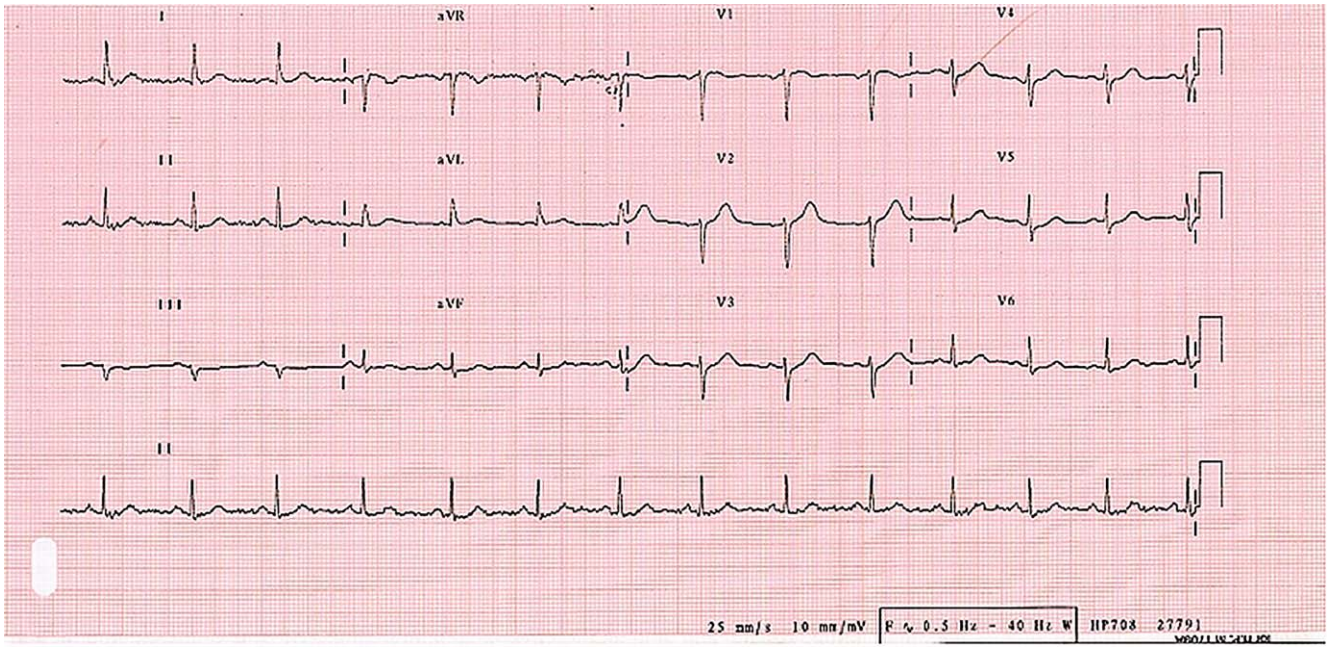

Fig. 1. Normal electrocardiographic findings on resting surface ECG.

examination was completely normal. Resting ECG revealed no abnormality (Fig. 1). He underwent treadmill exercise test on Bruce protocol in order to induce coronary ischemia. At maximal exercise he experienced severe, crushing chest pain on the retrosternal region associated with 1.5 mm ST elevation in leads I and aVL (Fig. 2). The test was emergently stopped and then he was undertaken into the emergency room. Following intravenous nitroglycerine treatment for 10 min, chest pain and ST elevation were resolved. Troponin T and CK-MB levels were found to be

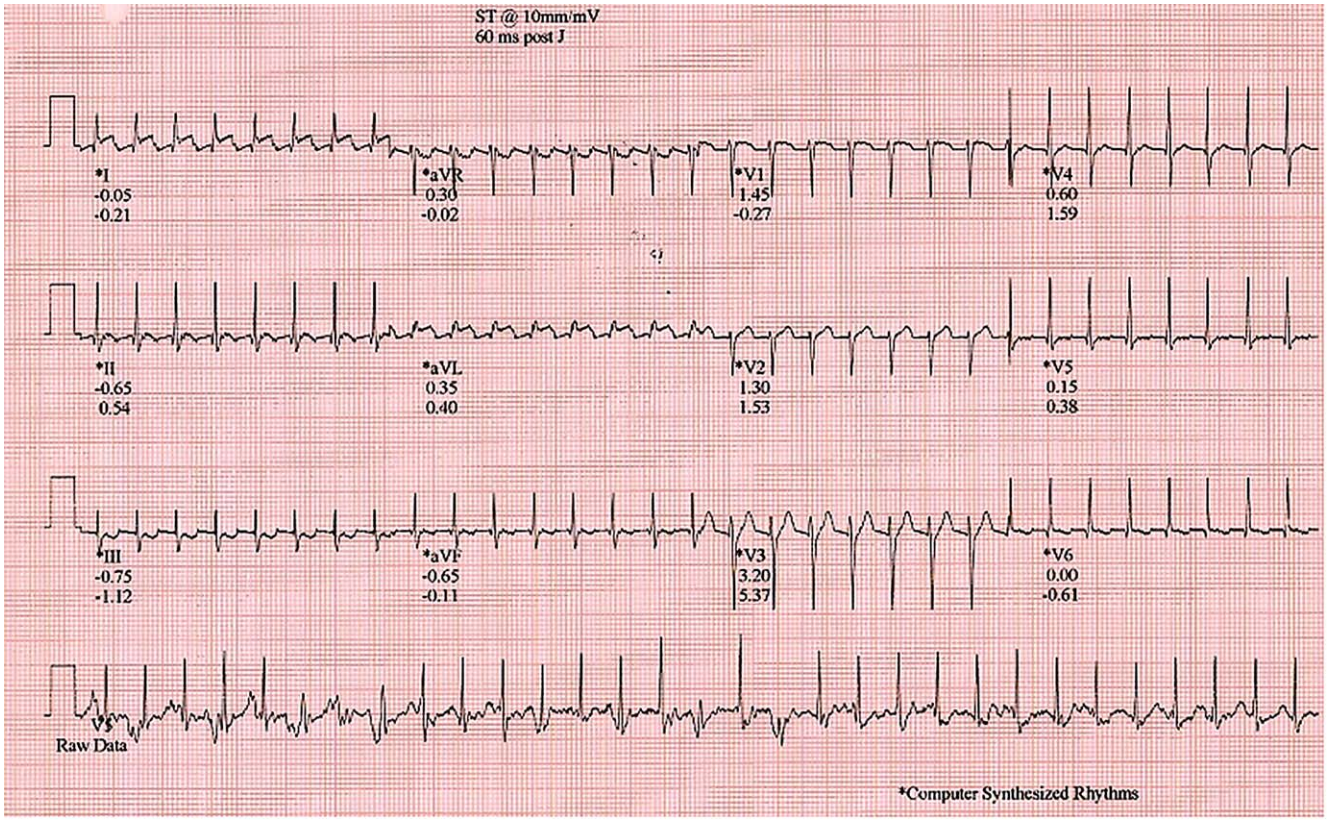

Fig. 2. Treadmill exercise testing shows 1.5 mm ST elevation in leads I and aVL at peak exercise.