CASO CLÍNICO

Arterial thrombosis and acute myocardial infarction with angiographically normal coronary arteries in a woman heterozygous for both factor V Leiden and prothrombin mutation

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Received November 12, 2010; accepted May 2, 2011

KEYWORDS
Arterial thrombosis; Myocardial infarction; Thrombophilia

PALAVRAS-CHAVE
Trombose arterial; Enfarte do miocárdio; Trombofilia

Abstract Thirteen years after her last thrombotic event, anticoagulation was discontinued in a patient with combined thrombophilia involving mutation in factor V and G20210A polymorphism of the prothrombin gene. The only history was of arterial thrombosis. Three months later she presented a transmural myocardial infarction caused by coronary thrombosis.

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Resumo Após treze anos do último evento trombótico, a anticoagulação foi interrompida numa paciente com associação de trombofilia factor V de Leiden e mutação G20210A. Ela possuía história de tromboses arteriais. Três meses após, a paciente apresentou enfarte transmural do miocárdio devido à trombose coronariana.

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Introduction

Genetic, environmental, and behavioral risk factors may interact to cause thrombosis. Factor V Leiden and the prothrombin G20210A mutation are two highly prevalent genetic variants that are well documented risk factors for venous thrombosis. The role of these gene variants in arterial events has been difficult to define. In 1997, two studies by Rosendaal et al.1,2 showed increased frequencies of factor V Leiden and prothrombin G20210A in young women who experienced myocardial infarction (MI). There is a probable synergic role for genetic factors in subgroups of patients presenting with environmental or behavioral factors.

Myocardial infarctions with normal (or near-normal) coronary arteries (MINCA) account for 1% to 12% of cases3,4. A possible mechanism for MINCA is occlusion of the vessel lumen by thrombus that is subsequently rapidly lysed. Etiological factors that have been reported include cocaine use, embolism, coronary endothelial dysfunction and hypercoagulable states.

Case report

A 51-year-old white woman was admitted to the hospital with acute chest pain of less than 6 hours duration. The cardiological investigation showed a non-Q wave acute coronary syndrome in the anteroseptal wall that did not affect its motion, and coronary artery angiography showed a normal left anterior descending artery and an occluded distal portion of the third marginal branch of the circumflex artery. She had smoked about 20 to 40 cigarettes/day since the age of 18. No other known risk factors for coronary heart disease were present. The patient was treated with nitroglycerin infusion and an oral beta-blocker. She made a good recovery and was discharged from the hospital two days later. Seventy-two hours later, she experienced severe, squeezing, acute anterior chest pain and was readmitted to the hospital. The ECG showed a pattern typical of a transmural acute anterior wall myocardial infarction. A new coronary angiogram (Figure) showed almost total occlusion of the vessel that was subsequently rapidly lysed.

Discussion

The association between factor V Leiden and prothrombin G20210A and arterial events is controversial. A study of eight prothrombotic gene polymorphisms, including these two genetic variants, in 1210 patients <45 years of age showed no increased risk of premature MI. Two meta-analyses5 did not demonstrate an association between factor V Leiden and arterial disease. Nevertheless, in a case-control study6 of young women (aged 18-44), factor V Leiden was associated with a 2.4-fold increased risk of MI. This increased risk was limited to current smokers. There may be a small risk for arterial events associated with these genetic variants, which is considerably amplified when additional risk factors are present.

In a previously reported small series, almost all patients presenting with MINCA were males <50 years of age and regular cigarette smokers1. It has been suggested that thrombophilic factors may increase the risk of MI in patients with normal coronary angiograms more than in those with more severe coronary atherosclerosis1,2. Furthermore, in

Figure  Coronary angiogram showing almost total occlusion of the second diagonal (A) and the descending anterior coronary artery (B).
this specific cardiological situation, the frequencies of both factor V Leiden and prothrombin G20210A seemed to be higher in patients <50 years of age. In another study, factor V Leiden was found in 12% of young patients (mean age 44 years) with MINCA, in 4.5% of patients with MI and significant coronary artery disease, and in 5% of normal controls.

It is worth mentioning that carriers of two defects seem to be at greater risk of venous thrombosis than their relatives with a single defect. A pooled analysis of eight case-control studies showed a venous thrombotic risk of 4.9 for factor V Leiden, 3.8 for prothrombin G20210A, and 20 for those heterozygous for both mutations.

The unusual aspect of the present case is that the patient was heterozygous for both genetic variants, but presented with no venous thrombosis, and experienced life-threatening arterial thrombotic events that occurred while she was not receiving anticoagulation.

References