



ORIGINAL ARTICLE

Gamma glutamyltransferase, inflammation and cardiovascular risk factors in isolated coronary artery ectasia



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Received 15 March 2015; accepted 11 May 2015

Available online 23 December 2015

KEYWORDS

Coronary ectasia;
Risk factors;
Inflammation;
Gamma
glutamyltransferase

Abstract

Introduction and Objective: There are conflicting data on the prevalence of cardiovascular risk factors in coronary artery ectasia (CAE). It is unclear whether CAE is associated with high-sensitivity C-reactive protein (hs-CRP) and gamma glutamyltransferase (GGT). We therefore investigated major cardiovascular risk factors, serum GGT and hs-CRP levels in a large population of patients with CAE.

Methods: A total of 167 patients with isolated CAE and 150 controls with normal coronary arteries were selected from 10 505 patients undergoing coronary angiography. Serum GGT and hs-CRP levels were evaluated in addition to cardiovascular risk factors including family history, obesity, smoking, diabetes, hypertension and hyperlipidemia.

Results: Hypertension and obesity were slightly more prevalent in CAE patients than in controls, whereas diabetes was slightly less frequent in CAE patients. Other risk factors were similar. Serum GGT (22 [17–42] vs. 16 [13–21] U/l, $p=0.001$) and hs-CRP (2.9 [1.9–3.6] vs. 1.4 [1.1–1.8] mg/l, $p=0.001$) levels were higher in CAE patients than in controls. The presence of CAE was independently associated with diabetes (OR: 0.44, 95% CI: 0.20–0.95, $p=0.04$), obesity (OR: 2.84, 95% CI: 1.07–7.56, $p=0.04$), GGT (OR: 1.08, 95% CI: 1.03–1.12, $p=0.001$) and hs-CRP levels (OR: 3.1, 95% CI: 2.1–4.6, $p=0.001$). In addition, GGT and hs-CRP levels were higher in diffuse and multivessel ectasia subgroups than focal and single-vessel ectasia subgroups (each $p<0.05$). **Conclusions:** Our findings show that CAE can be independently and positively associated with obesity, GGT and hs-CRP levels, but inversely with diabetes. Moreover, its severity may be related to GGT and hs-CRP levels.

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PALAVRAS-CHAVE

Ectasia coronária;
Fatores de risco;
Inflamação;
Glutamyltransferase

Gama glutamiltransferase, inflamação e fatores de risco cardiovasculares na ectasia isolada da artéria coronária

Resumo

Introdução e objetivos: Existem dados contraditórios relativamente à prevalência dos fatores de risco cardiovascular na ectasia da artéria coronária (EAC). Não é claro se a EAC possa estar associada à proteína C reativa de alta-sensibilidade (PCR-as) e à gama glutamiltransferase (gama-GT). Assim examinámos fatores de risco cardiovascular *major*, a gama-GT sérica e os níveis de PCR-as numa população mais alargada de doentes com EAC.

Métodos: Foram selecionados um total de 167 doentes com EAC isolada e 150 casos-controlo com artérias coronárias normais dos 10 505 doentes submetidos a angiografia coronária. A gama-GT sérica e os níveis de PCR-as foram avaliados para além dos fatores de risco cardiovascular incluindo a história familiar, obesidade, tabagismo, diabetes, hipertensão e hiperlipidemia.

Resultados: A hipertensão e a obesidade foram ligeiramente mais prevalentes nos doentes com EAC do que nos casos-controlo enquanto a diabetes foi menos frequente nos doentes com EAC. Os outros fatores de risco foram semelhantes. Os níveis de gama-GT sérica [22 (17-42) *versus* 16 (13-21) U/L, $p=0,001$] e de PCR-as [2,9 (1,9-3,6) *versus* 1,4 (1,1-1,8) mg/L, $p=0,001$] foram superiores nos doentes com EAC do que nos casos-controlo. A presença de EAC foi independentemente associada à diabetes (OR: 0,44, IC 95%: 0,20-0,95, $p=0,04$), obesidade (OR: 2,84, IC 95%: 1,07-7,56, $p=0,04$), gama-GT (OR: 1,08, IC 95%: 1,03-1,12, $p=0,001$) e níveis de PCR-as (OR: 3,1, IC 95%: 2,1-4,6, $p=0,001$). Além disso, os níveis de GGT e de PCR-as foram superiores nos subgrupos de ectasia difusa e multivasos do que nos subgrupos de ectasia focal e de um vaso (cada $p < 0,05$).

Conclusão: As nossas conclusões mostram que a EAC pode ser certamente associada à obesidade, aos níveis de gama-GT e de PCR-as, mas de modo inverso à diabetes. Além disso a sua gravidade pode estar associada aos níveis de gama-GT e de PCR-as.

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Introduction

Coronary artery ectasia (CAE) is characterized by an abnormal dilatation of the coronary arteries.¹⁻³ More than half of cases of CAE are due to atherosclerosis, and it has thus been considered a variant of atherosclerotic coronary artery disease (CAD).¹⁻³

It has been shown that inflammation is one of the causes of atherosclerosis.⁴ Similarly, previous studies have shown a link between C-reactive protein (CRP) and CAE.^{5,6} However, these studies were relatively small. On the other hand, there is a variety of data on the association of major risk factors for atherosclerosis with CAE.^{2,3,7-11}

Gamma glutamyltransferase (GGT) catalyzes glutathione, a major non-protein antioxidant in the cell.¹² It plays a role in oxidation of low-density lipoprotein (LDL) cholesterol and in the pathogenesis of atherosclerosis.^{13,14} Epidemiologic studies have reported that serum GGT level has predictive value for cardiovascular disease and mortality in the general population.¹⁵⁻¹⁷

There have been two studies evaluating GGT levels in CAE patients. They showed that GGT levels were increased in patients with CAE,^{18,19} but these studies were small. Therefore, we aimed to investigate serum GGT and CRP levels in addition to major risk factors for atherosclerosis in a larger population of patients with isolated CAE.

Methods**Patients**

Between January 2007 and December 2012, 427 (4.1%) patients with CAE were selected from 10 505 patients who underwent elective diagnostic coronary angiography in our center. After application of the exclusion criteria, the remaining 167 (1.6%) isolated CAE patients were designated the CAE group. During the same period, 150 age- and gender-matched controls with normal coronary arteries were consecutively selected. The indication for coronary angiography was the presence of typical angina pectoris or significant myocardial ischemia in noninvasive stress tests.

Exclusion criteria were as follows: acute coronary syndromes, history of alcohol consumption, high alanine and/or aspartate transaminase levels, presence of concomitant stenotic lesion (>25% stenosis), significant left ventricular hypertrophy (septal thickness ≥ 13 mm), hematologic disorders, acute or chronic infectious disease, hepatitis or previously known inflammatory/autoimmune disorders, renal dysfunction (serum creatinine ≥ 177 mmol/l), documented cancer, use of steroids, and significant valvular heart disease (moderate to severe for stenotic lesions or grade ≥ 2 for valvular regurgitation).

A detailed medical history and history of cardiovascular risk factors such as diabetes, hypertension and smoking

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