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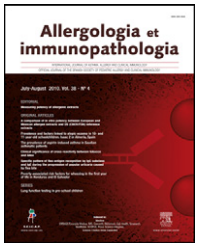

ORIGINAL ARTICLE

# History of allergy is a predictor of adverse events in unstable angina treated with coronary angioplasty

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**KEYWORDS**
Allergy;
Unstable angina;
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Risk stratification

**Abstract**
*Background:* The aim was to investigate prognostic relevance of history of allergy in subjects with unstable angina treated with coronary angioplasty.
*Methods:* Fifty-seven consecutive patients with unstable angina who underwent coronary angioplasty were enrolled in the study and were divided into two groups: those with a history of allergy (Group A, $N = 15$); and controls (Group C, $N = 42$). Major adverse cardiac events were recorded over a six-month follow-up period. Patients with primary or unsuccessful angioplasty and patients treated with drug eluting stent were excluded from the study.
*Results:* Group A patients (history of allergy) showed a 46.67% incidence of major adverse cardiac events at six-month follow-up (vs. 9.52% Group C, $p < 0.01$): results remained significant even in a multiple Cox regression analysis (hazard ratio 7.17, 95% CI 1.71–29.98, $p < 0.01$).
*Conclusion:* History of allergy is an independent predictor of major adverse cardiac events after coronary angioplasty in a six-month follow-up period in unstable angina.


## Introduction

Previous studies reported a link between disease characterised by immune disorders and coronary artery disease.[1] Both conditions share inflammatory mechanisms and inflammatory mediators are involved in the clinical progression of both diseases.[1] Atherosclerosis is characterised by an immune activation of Th1 lymphocytes[2] and activated inflammatory pathways were found alongside plaque progression and disruption.[3,4] Also coronary angioplasty triggers an inflammatory response[5,6] according to some studies related to mid-term prognosis.[7] In a previous paper, cytokines involved in allergic immune disease, mostly released by Th2 lymphocyte such as interleukin(IL)-4 and IL-13,[8] were described in the inflammatory activation following coronary angioplasty.[9] In this study, we therefore aimed to investigate the prognostic role played by history of allergy characterised by Th2 activation in subjects with unstable angina (UA) treated with coronary angioplasty.

## Methods

Fifty-seven consecutive patients with UA who underwent coronary angioplasty were enrolled in the study and were

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divided into two groups: those with a history of allergy (Group A, $N = 15$); and controls (Group C, $N = 42$).

History of allergy was defined as a prior diagnosis of urticaria; angio-oedema; allergic rhinitis; atopic dermatitis; allergic asthma; or anaphylactic reactions. Allergic patients underwent a preventive treatment with histamine and steroids before coronary angioplasty in order to minimise the risk of allergic reaction during procedure. Principal clinical characteristics, left ventricular ejection fraction, Gensini Score[10] and American Heart Association type of coronary lesion[11] treated with angioplasty were ascertained: data are reported in Table 1.

Major adverse cardiac events (MACEs) (recurrent angina or acute myocardial infarction, sudden death, target lesion revascularisation) were recorded over a six-month follow-up period. Events were ascertained by direct or telephone contact with the patient or, in the event of death, the next of kin.

Patients with primary or unsuccessful coronary angioplasty and patients treated with drug eluting stent were excluded from the study. Drug eluting stents were excluded in order to minimise the blunted inflammatory reaction elicited by this kind of stents.[9]

All patients gave a written informed consent. The study was approved by the local ethics committee.

## Statistical analysis

Continuous variables were expressed as mean value $\pm$ standard deviation and categorical variables as percentages. Differences in percentages were analysed with the $\chi^2$ test. Mean values for continuous variables were compared with Student's $t$-test. Survival analysis was performed with the Log-Rank test and survival rates were shown with Kaplan–Meier curves; a multiple Cox regression model was used to analyse survivals adjusted for potential confounders. A $p$ value <0.05 was considered as statistically significant.

## Results

The mean age of patients was $62.74 \pm 8.96$ years, 82.46% were male, 59.65% were diabetics, in 47.37% of cases the treated vessel was left anterior descending (LAD) coronary artery. Groups A and C did not show significant differences, except in the rate of angioplasty on LAD. Group A patients showed a 46.67% incidence of MACEs at six-month follow-up (vs. 9.52% Group C, $p < 0.01$) (Fig. 1) (five cases of restenosis, one death, three repeat PCI, eight recurrent angina, four urgent CABG). History of allergy was associated with an increased risk of adverse events (Log-Rank $p < 0.01$). Results remained significant even after correction for age, gender, cardiovascular risk factors, left ventricular ejection fraction, Gensini Score, type of lesion, and treated coronary vessel in a multiple Cox regression analysis (hazard ratio 7.17, 95% C.I. 1.71–29.98, $p < 0.01$) (Fig. 2).

There is a cumulative effect between diabetes and history of allergy on incidence of MACEs after coronary angioplasty (Log-Rank $p < 0.05$) (Fig. 3).

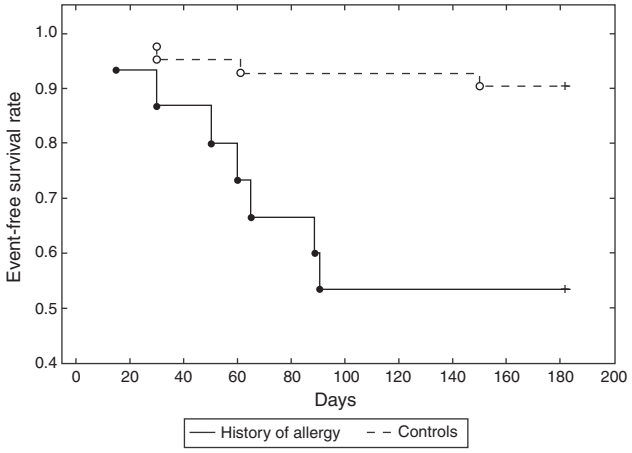


**Figure 1** Kaplan–Meier survival rates: history of allergy vs. controls (Log-Rank $p < 0.01$).

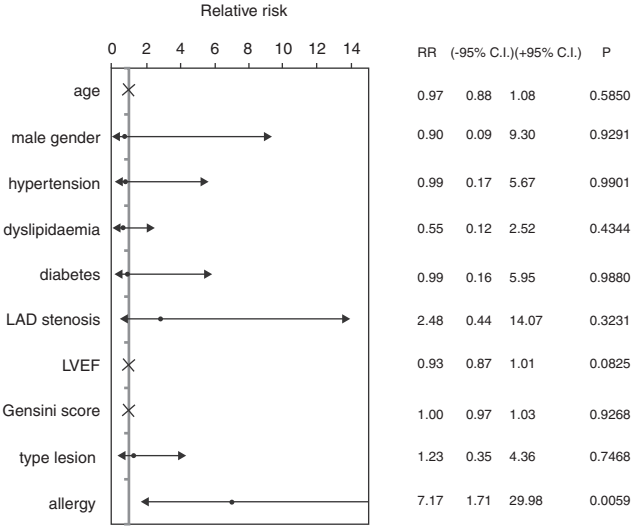


**Figure 2** Multiple Cox analysis for predictors of adverse cardiac events.

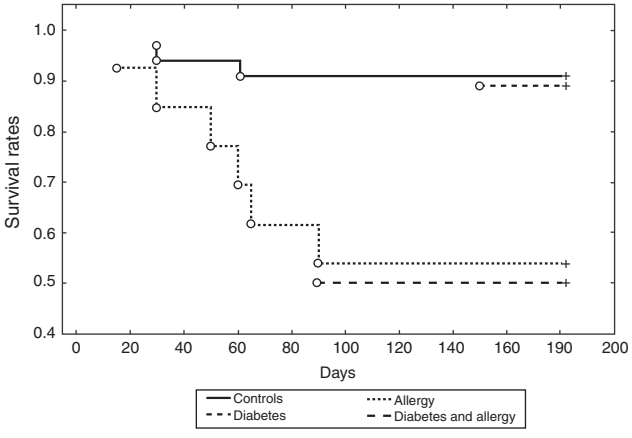


**Figure 3** Cumulative effect of diabetes and allergy on Kaplan–Meier survival curves (Log-Rank $p < 0.05$).