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Aldehyde dehydrogenase 2 (ALDH2) polymorphism gene and coronary artery disease risk: a meta-analysis

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ABSTRACT. We studied the association between aldehyde dehydrogenase 2 (ALDH2) polymorphism and coronary artery disease (CAD) and clarified the mechanisms underlying this association. We searched the ISI, Medline (Ovid), PubMed, CNKI, Wanfang, and Weipu Databases. Statistical analysis was performed using Revman 5.0 and Stata12.0 softwares. A total of 3305 cases and 5016 controls in 12 case-control studies were included in this meta-analysis. Variant A allele carriers showed a 48% increased risk of CAD compared with homozygote A allele [odds ratio (OR) = 1.48, 95% confidence interval (CI) = 1.18-1.87 for AA + AG *vs* GG]. In subgroup analysis by gender, significantly elevated risks were found in the mixed group (OR = 1.78, 95%CI = 1.42-2.22) but not in males (OR = 1.12, 95%CI = 0.79-1.57). In subgroup analysis by disease type, significant elevated risks were associated with A allele carriers in myocardial infarction [OR = 1.69, 95%CI = (1.05-2.71)], in coronary

heart disease (OR = 1.36, 95%CI = 1.00-1.86), but not in coronary heart disease plus diabetes mellitus subjects (OR = 1.57, 95%CI = 0.58-4.29). Moreover, those with the GG genotype consumed significantly more alcohol than those with the AA/AG genotypes (standard mean deviation: 6.32 g, 95%CI = 2.09-10.55, P = 0.000). ALDH2 polymorphisms may be risk factors for CAD. Moreover, CAD patients with ALDH2 genotypes AG and AA consumed significantly less alcohol than those with GG. To further evaluate gene-gene and gene-environment interactions between ALDH2 polymorphisms and the risk of CAD, more studies with larger groups of patients are required.

Key words: Alcohol dehydrogenase 2; Coronary artery disease; Meta-analysis; Polymorphism

