Cyclin D1 G870A gene polymorphism and risk of leukemia and hepatocellular carcinoma: a meta-analysis

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ABSTRACT. Cyclin D1 (CCND1) is a key protein involved in cell-cycle regulation, and the CCND1 G870A polymorphism is associated with many types of malignancy. Studies examining the associations between this G870A polymorphism and susceptibility to leukemia and hepatocellular carcinoma (HCC) have shown inconsistent results. Therefore, we conducted a meta-analysis to clarify these associations. A search of the PubMed database yielded 7 relevant articles: 3 pertaining to leukemia and 4 to HCC. The odds ratios (ORs) from individual studies were pooled using a fixed or random-effect model. A significant association was observed between the CCND1 G870A variant and leukemia under the allele contrast model [P = 0.003, OR = 1.49, 95% confidence interval (CI) = 1.15-1.95], the homozygote contrast model (P = 0.003, OR = 2.30, 95%CI = 1.34-3.96), and the recessive model (P = 0.002, OR = 2.03, 95%CI = 1.29-3.21). A significant association was observed between this variant and HCC under the recessive model (P =
0.0006, OR = 1.62, 95%CI = 1.23-2.14), the dominant model (P = 0.002, OR = 1.59, 95%CI = 1.19-2.14), the homozygote contrast model (P < 0.0001, OR = 2.06, 95%CI = 1.45-2.94), and the allele contrast model (P < 0.0001, OR = 1.43, 95%CI = 1.20-1.69). Our findings suggest that heritable CCND1 status may influence the risk of developing leukemia and HCC, and that more attention should be given to carriers of these susceptibility genes.

Key words: Cyclin D1 G870A; Hepatocellular carcinoma; Leukemia; Polymorphism; Susceptibility