Implicating the H63D polymorphism in the *HFE* gene in increased incidence of solid cancers: a meta-analysis

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Genet. Mol. Res. 14 (4): 13735-13745 (2015)
Received May 26, 2015
Accepted August 13, 2015
Published October 29, 2015
DOI http://dx.doi.org/10.4238/2015.October.28.36

ABSTRACT. A number of previous studies have demonstrated that the *HFE* H63D polymorphism is associated with increased risk of incidence multiple types of cancer, including colorectal cancer, breast cancer, liver cancer, pancreatic cancer, and gynecological malignant tumors. However, the clinical outcomes were inconsistent. Therefore, this meta-analysis was conducted to summarize the effect of the H63D variant on the incidence of solid tumor. PubMed and EMBASE databases were searched for articles associating the *HFE* H63D polymorphism with cancer risk. The relationships were evaluated by calculating the pooled odds ratios (ORs) with 95% confidence intervals (CIs). A total of 28 studies, including 7728 cancer cases and 11,895 controls, were identified. Statistically significant associations were identified between the *HFE* H63D polymorphism and solid cancer risk (CG *vs* CC, OR = 1.14, 95%CI = 1.07-1.23, P < 0.001; GG *vs* CC, OR = 1.28, 95%CI = 1.06-1.55, P = 0.010; CG/GG *vs* CC, OR = 1.16, 95%CI = 1.08-1.24, P < 0.001; GG *vs* CC/CG, OR = 1.24, 95%CI = 1.02-1.49, P = 0.027). In the subgroup analysis, we illustrated the effect

of the H63D polymorphism on hepatocellular carcinoma and pancreatic cancer risk, particularly in the Asian and African subgroups; however, this was not observed in gynecological malignant tumors. In summary, this analysis provided strong evidence that the *HFE* H63D polymorphism may play a critical role in the increased aggressiveness of hepatocellular carcinoma and pancreatic cancer.

Key words: *HFE* H63D polymorphism; Solid cancer; Meta-analysis; Molecular epidemiology

