



Updated analysis of studies on the cytotoxic T-lymphocyte-associated antigen-4 gene A49G polymorphism and Hashimoto's thyroiditis risk

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Genet. Mol. Res. 12 (2): 1421-1430 (2013)

Received July 23, 2012

Accepted December 17, 2012

Published April 26, 2013

DOI <http://dx.doi.org/10.4238/2013.April.26.4>

ABSTRACT. Published data on the association between the cytotoxic T-lymphocyte-associated antigen-4 gene A49G polymorphism and the risk for Hashimoto's thyroiditis (HT) are inconclusive. A meta-analysis was performed to derive a more precise estimation. Published case-control studies in English or Chinese were identified. In total, 24 studies with 2295 cases and 4521 controls were investigated. A random-effect model was performed irrespective of between-study heterogeneity. Study quality was assessed in duplicate, and subgroup analyses were conducted by ethnicity or age. Overall, the 49G allele was associated with an increase in HT risk [odds ratio (OR) = 1.31; 95% confidence interval (95%CI) = 1.17-1.47; $P < 0.00001$]. In a subgroup analysis by ethnicity, comparison of allele 49G with 49A generated a 27% increased risk among East Asians (OR = 1.48; 95%CI = 1.24-1.76; $P < 0.00001$) and whites (OR = 1.27; 95%CI = 1.12-1.44; $P = 0.0002$). We also found an increased risk among adults (OR = 1.31; 95%CI = 1.17-1.47; $P < 0.00001$) but not among children (OR = 1.44; 95%CI = 0.75-2.79; $P = 0.27$), possibly owing to the small sample sizes in children. No publication

biases were observed. This meta-analysis suggested that the cytotoxic T-lymphocyte-associated antigen-4 gene 49G allele was associated with an increased HT risk, especially in adults.

Key words: Meta-analysis; Hashimoto's thyroiditis; *CTLA-4*; A49G polymorphism