Association between IL-1RN gene polymorphisms and susceptibility to ankylosing spondylitis: a large Human Genome Epidemiology review and meta-analysis

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ABSTRACT. We made a Human Genome Epidemiology review and meta-analysis to examine a possible association between interleukin-1 receptor antagonist (IL-1RN) polymorphisms and susceptibility to ankylosing spondylitis (AS). Studies of IL-1RN polymorphisms and susceptibility to AS were found by searching the Pubmed, Cochrane library, Embase, Web of Science, Springerlink, CNKI, and CBM databases. Data were extracted by 2 independent reviewers. The meta-analysis was performed with the Review Manager Version 5.1.6 and STATA Version 12.0 software. The odds ratio (OR) and 95% confidence intervals (95%CI) were calculated based on the extracted data. Thirteen studies with 5391 AS cases and 5239 healthy controls were retrieved. Seven IL-1RN polymorphisms were addressed, including rs30735, rs31017, rs419598, rs315951, rs315952, rs27810, and VNTR. Meta-analysis showed that the rs30735*C allele/carrier, the rs31017*G carrier and the rs315952*T carrier were positively and significantly associated with susceptibility to AS (OR = 1.45, 95%CI = 1.19-1.76; OR = 1.73, 95%CI = 1.34-2.24; OR = 1.30, 95%CI = 1.01-1.69; OR = 1.54, 95%CI = 1.16-2.04). A subgroup analysis based on ethnicity revealed significant positive associations between the rs30735*C allele/carrier and the
rs31017*G allele and susceptibility to AS in both Caucasian and Asian populations, while the positive association between the rs315952*T carrier and AS susceptibility was significant only in Asian populations (OR = 1.54, 95%CI = 1.16-2.04). This meta-analysis suggests that IL-1RN polymorphisms are involved in the pathogenesis of AS. The rs30735*C allele/carryer, and the rs31017*G allele may be risk factors for ankylosing spondylitis in Caucasians and Asians, while the rs315952*T carrier is associated with susceptibility to this disease only in Asians.

Key words: Interleukin-1 receptor antagonist; Genetic polymorphisms; Ankylosing spondylitis; Susceptibility; Meta-analysis