Vitamin D receptor genetic polymorphisms and the risk of multiple sclerosis: A systematic review and meta-analysis

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There are conflicting results regarding the exact effect of the vitamin D receptor (VDR) gene polymorphisms on the susceptibility to multiple sclerosis (MS). Therefore, we aimed to investigate the impact of four major studied VDR gene polymorphisms consisting of ApaI, BsmI, FokI, and TaqI on the risk of MS in the Iranian population. A literature search was performed in various databases to find case-control studies evaluating the association between VDR gene polymorphisms and MS risk in Iran. Data were extracted and odds ratios (OR) with 95% confidence intervals (CI) were calculated. Subgroup analyze was performed to detect potential sources of heterogeneity. A total of 1206 cases and 1402 controls in nine case-control studies were included. ApaI was the only variant which showed statistically significant relation in allelic (OR = 0.54 (95% CI: 0.37?0.79); P = 0.00), homozygote (OR = 3.48 (95% CI: 1.7?6.9); P = 0.00), dominant (OR = 0.56 (95% CI: 0.3?0.79); P = 0.01), and recessive (OR = 0.35 (95% CI: 0.18?0.66); P = 0.00) models. The TaqI polymorphism showed a significant negative association with MS only in the homozygote model (OR = 0.28 (95% CI: 0.08?0.9); P = 0.04). The BsmI polymorphism also showed significant relation in allelic (OR = 0.69 (95% CI: 0.51?0.94); P = 0.01), homozygote (OR = 0.46 (95% CI: 0.25?0.86); P = 0.01), and recessive OR = 0.56 (95% CI: 0.39?0.8); P = 0.00) models after performing sensitivity analysis. FokI polymorphism showed no significant association with MS risk. ApaI and TaqI TT genotype were found contributing to MS susceptibility and BsmI and FokI showed no relation with MS susceptibility

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Iranian population

Meta-analysis

Multiple sclerosis

Vitamin D receptor

vitamin D receptor

allele

data base

data extraction

evaluation study

genetic heterogeneity

genetic polymorphism

genotype

homozygote

human

Iranian people

meta analysis

multiple sclerosis

odds ratio

Review

risk assessment

sensitivity analysis

systematic review