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Associations of VEGF polymorphisms in choroidal neovascularization secondary to high myopia

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Abstract

Pathological myopia, also called as high myopia, can cause severe visual function loss when accompanied with complications such as chorioretinal atrophy and choroidal neovascularization (CNV). The size of the CNV also seriously affects the visual prognosis because it determines the size of the scotoma. However, the mechanisms underlying CNV occurrence and growth in myopic eyes have not been fully elucidated. We evaluated associations between vascular endothelial growth factor (VEGF) gene polymorphisms and the occurrence and/or the size of CNV in highly myopic eyes. Our case-control study included 184 highly myopic patients with macular CNV in at least 1 eye and 143 patients without macular CNV in either eye. Although we genotyped 4 tagging single nucleotide polymorphisms (SNPs; rs699946, rs699947, rs3025033, and 3025035) and 4 functional SNPs (rs1570360, rs2010963, rs833061, and rs3025039), there was no associations between these SNPs and the occurrence of CNV ($P > 0.10$). Of the 184 patients with myopic CNV, CNV size could be measured in 83 patients. The genotype distribution of rs2010963 was significantly correlated with CNV area ($P = 0.0047$). The size of CNV was largest in patients with a CC genotype of rs2010963, intermediate with a CG genotype, and smallest with a GG genotype. This association was successfully replicated in the additional 76 eyes with myopic CNV, and pooled analysis revealed significant association of rs2010963 with CNV size ($P = 0.00078$), suggesting roles of VEGF in the growth rather than the emergence of CNV.

Biography

Kenji Yamashiro received an M.D. from Kyoto University Medical School in 1995 and a Ph.D. from Kyoto University Graduate School of Medicine in 2002 after joining Angiogenesis lab in Massachusetts Eye and Ear Infirmary at Harvard Medical School. Dr. Yamashiro is an author on over 90 scientific publications (impact factor: over 350) and currently Assistant Professor of Ophthalmology at Kyoto University Graduate School of Medicine in Kyoto, Japan. His recent interest is in molecular and genetic background of age-related macular degeneration, phathologic myopia, and choroidal neovasculatrization.