소아기 IgA 신병증의 발생에 영향을 미치는 bone morphogenetic protein 2의 유전자 단일염기 다형성에 관한 연구

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Coding Polymorphisms of Bone Morphogenetic Protein 2 Contributing to the Development of Childhood IgA Nephropathy in Korean Population

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Purpose: Bone morphogenetic proteins (BMPs) are multi-functional growth factors belonging to the transforming growth factor, beta (TGFB) superfamily and are important in both preservation of kidney function and resistance to injury. BMP2 is highly regulated in the kidney, and high affinity binding sites for BMP2 have been identified in kidney epithelial cells. BMP2 has been demonstrated to play various roles in the pathogenesis of renal diseases. However, the role of the BMP2 gene in glomerulonephritis has not previously been investigated. We aimed to evaluate the association of BMP2 gene polymorphisms with immunoglobulin A nephropathy (IgAN) in Korean children. Methods : We evaluated 187 pediatric patients with biopsy-proven IgAN and 262 healthy controls. Two coding single nucleotide polymorphisms (cSNPs) in the BMP2 gene [rs235768 (missense, Arg190Ser) and rs1049007 (synonymous, Ser87Ser)] were selected and genotyped by direct sequencing.

Results: Genotypes of rs1049007 were associated with childhood IgAN in the codominant model II (GG versus AA) [p=0.02, OR (95% CI)=0.16 (0.04-0.70)] and in the recessive model [p=0.0023, OR (95% CI)=0.16 (0.04-0.69)]. We also found an association between rs235768 and IgAN in the codominant model II (TT versus AA) [p=0.01, OR (95% CI)=0.08 (0.01-0.57)] and in the recessive model [p=0.0002, OR (95% CI)=0.07 (0.01-0.55)]. After Bonferroni correction, these associations of rs235768 and rs1049007 with IgAN risk remained significant. In the haplotype analysis, the TG haplotype [p=0.01, OR (95% CI)=6.76 (1.55-29.50) in the dominant model] and AA haplotype [p=0.01, OR (95% CI)=0.08 (0.01-0.59) in the recessive model] showed associations with IgAN.

Conclusion: The BMP2 gene may contribute to susceptibility to IgAN in Korean children.

Key Words: IgA 신병증, 단일 염기 다형성, BMP2
IgA nephropathy, Polymorphism, BMP2