

체계적 문헌고찰: 유전적 다형성이 ESA저항성 빈혈에 미치는 영향

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Systematic Review and Meta-analysis of Genetic Effects on Erythropoiesis-Stimulating Agent Resistant Anemia

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Background: Anemia is a major complication of patients with chronic kidney disease (CKD). Although erythropoiesis-stimulating agents (ESAs) have been used to correct anemia related to kidney failure, up to 25% of dialysis patients showed resistance to the treatment. Even when a number of factors to contribute to the ESA resistance are considered, there are still about 10% of dialysis patients with ESA-resistant anemia. There have been studies to explain ESA resistance in relation with certain genetic polymorphisms. The aim of this systematic review was to reevaluate the effects of various genetic polymorphisms on the resistance of ESA in anemia with CKD.

Study design: A systematic review and meta-analysis of genetic effects on ESA resistance.

Setting & Population: Adults on maintenance dialysis therapy with anemia.

Selection Criteria for Studies: ESA amount stratified by genetic polymorphisms were required to be specified.

Predictors: Genetic polymorphisms of ACE, HFE, IL10, IL6, IL1B, VDR Bsm1, VDR Taq1, TNF- α , and IFN- γ genes.

Outcomes: Amounts of ESA treated to meet hemoglobin target.

Results: 12 articles met the inclusion criteria: Effects of ACE, HFE, IL10, IL6, and VDR Bsm1 genetic polymorphism were studied in 5, 3, 2, 2, and 2 articles, respectively. Other genes were published in only 1 article of each. Meta-analysis showed that wild types of genes favored relatively lower amount of ESA than variant types. ACE gene had the greatest impact on ESA resistance with standard difference in means (95% confidence interval) of -0.782 (-0.953 , -0.611). Also IL6 gene had significant effect of -0.215 (-0.427 , -0.003).

Limitations: As 8 out of 12 studies were performed retrospectively, factors other than genetic polymorphisms to affect ESA resistance might not be completely adjusted.

Conclusion: Genetic polymorphisms of ACE and IL6 genes might contribute to ESA resistance in anemic patients with CKD.

Key Words: 만성콩팥병, 빈혈, 유전적 다형성

Chronic kidney disease, Anemia, Genetic polymorphism