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TNF-alpha gene rs1800629 polymorphism and its potential role in nephropathy development among type 2 diabetics: an updated meta-analysis

Raphael Enrique Tiongco, **Miljun Catacata**, Imoan Shallom Aguas, Franzielle Jowe Cabrera, Chastene Christopher Flake, Maria Angelica Manao, Archie Policarpio
Department of Medical Technology, Angeles University Foundation, Philippines

Objectives: Diabetic nephropathy is one of the leading causes of chronic kidney disease in the world. The exact mechanism of disease development remains unclear but, studies suggest that the rs1800629 polymorphism in the tumor necrosis factor- (TNF-) alpha gene play a role in the pathogenesis of nephropathy among type 2 diabetics. However, results across various observational studies and even meta-analysis are inconclusive, which prompted the researchers to perform an updated meta-analysis.

Methods: The researchers searched PubMed for related literature written in English. Studies that determined the association of rs1800629 polymorphism among patients with type 2 diabetes mellitus and type 2 diabetic nephropathy were retrieved. Inclusion criteria were set, and the selected data were then extracted from the included studies and were subjected to analysis using a combination of Review Manager 5.3 and Meta-Essentials. Odds ratios (ORs) and 95% confidence intervals (CIs) were computed and pooled from the resulting studies using four analysis models (allelic, dominant, recessive, and co-dominant).

Results: Overall, a total of 5 studies was included in the analysis with a total of 1921 participants. Synthesis of the results showed that patients with type 2 diabetes and with rs1800629 polymorphism have reduced susceptibility to nephropathy (OR: 0.84-0.98; 95% CI: 0.47, 1.51; $p = 0.56-0.87$). However, the results are not significant. Stratification of the studies based on Asian ethnicity also yielded the same association.

Conclusions: Results of the updated meta-analysis suggest that rs1800629 polymorphism in type 2 diabetic patients may be protective against nephropathy. Further studies among Filipinos may be done to confirm the applicability of these results in our population.