Insulin receptor substrate 1 variant linked to GFR

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(HealthDay) -- A variant of the human insulin receptor substrate 1 (*IRS1*) gene, which plays an important role in modulating tissue response to insulin, is significantly associated with glomerular filtration rate (GFR), according to a study published online May 22 in *Diabetes*.

Farook Thameem, M.D., of the University of Texas Health Science Center in San Antonio, and colleagues conducted a study to identify and characterize genetic variants related to GFR linkage on chromosome 2q37 in 670 samples obtained from 39 large Mexican-American families with type 2 diabetes. The 2 kb promoter region and exons of the *IRS1* gene were sequenced for 32 individuals.

The researchers identified 11 single nucleotide polymorphisms (SNPs), and eight additional SNPs were selected from HapMap to comprehensively cover the 59-kb-long intron-1. After accounting for trait-specific covariate effects, only the Gly(972)Arg variant of the *IRS1* gene was significantly associated with GFR and serum triglyceride levels, with Arg972 carriers exhibiting significantly lower GFR values. The Gly(972)Arg variant contributed to 26 percent of the linkage signal on chromosome 2q37. Insulin-stimulated phosphorylation of IRS1 and Akt kinase were significantly reduced in human mesangial cells expressing the IRS1 mutant Gly(972)Arg.

"Taken together, the data provide the first evidence that genetic variation in *IRS1* may influence variation in GFR, probably through impaired insulin receptor signaling," the authors write.

More information: Abstract
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