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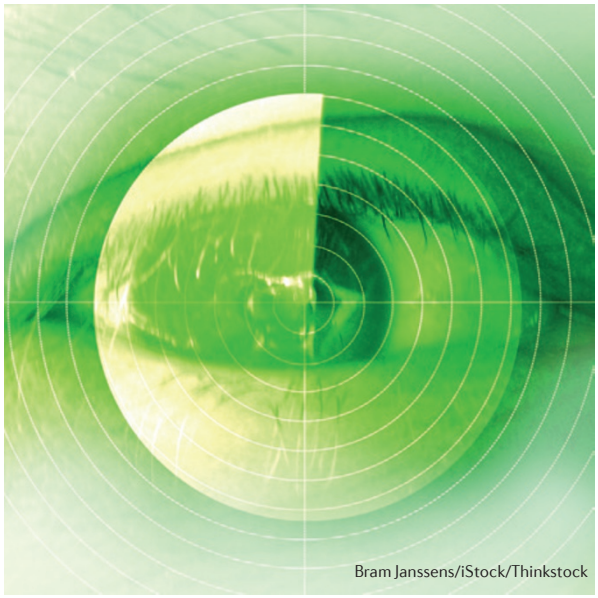
GENETICS

Risk of microvascular complications of T1DM

> Two SNPs… in *SLC19A3* were found to be associated with a reduced risk of severe diabetic retinopathy

Single nucleotide polymorphisms (SNPs) in the gene that encodes one of the thiamine transporters are associated with the risk of patients with type 1 diabetes mellitus (T1DM) developing diabetic retinopathy, according to new research.

"Although glycaemic control is the most important risk factor for microvascular complications, some individuals with poor metabolic control do not develop them, whereas others get severe retinopathy and nephropathy despite good glycaemic control, suggesting that genetically determined factors may contribute," explain authors Massimo Porta and Iiro Toppila. As thiamine is known to be involved in regulating intracellular glucose metabolism, Porta, Toppila and co-workers tested whether 134 SNPs in *SLC19A2* and *SLC19A3* (which encode thiamine transporters) and *SP1* and *SP2* (which encode transcription factors for *SLC19A2* and *SLC19A3*) were associated with retinopathy, nephropathy or a combined phenotype of both microvascular complications.



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The study included 1,566 participants in the FinnDiane Study who had severe diabetic retinopathy, as well as 218 control individuals who either had no diabetic retinopathy or mild disease. Two SNPs (rs12694743 and rs6713116) in *SLC19A3* were found to be associated with a reduced risk of severe diabetic retinopathy, as well as with a reduced risk of the combined phenotype of severe diabetic retinopathy and end-stage renal disease. Furthermore, the association between rs12694743 and the combined phenotype reached genome-wide significance when the researchers performed a meta-analysis that included patients from the Wisconsin Epidemiologic Study of Diabetic Retinopathy cohort.

"These findings suggest that genetic variations in *SLC19A3* might be involved in the pathogenesis of severe diabetic retinopathy and nephropathy and might help explain why some patients with T1DM are less prone than others to developing microvascular complications," say Porta and Toppila. The researchers acknowledge that work still needs to be done to determine the mechanisms underlying this association. "In addition, it should be investigated whether genetic testing is useful for identifying which patients with T1DM are less at risk of developing severe complications," conclude Porta and Toppila.

Claire Greenhill

ORIGINAL ARTICLE Porta, M. *et al.* Variation in *SLC19A3* and protection from microvascular damage in type 1 diabetes. *Diabetes* http://dx.doi.org/10.2337/db15-1247