

# Vascular endothelial growth factor gene polymorphisms contribute to the risk of endometriosis: an updated systematic review and meta-analysis of 14 case-control studies

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Genet. Mol. Res. 12 (2): 1035-1044 (2013)

Received July 11, 2012

Accepted February 15, 2013

Published April 2, 2013

DOI <http://dx.doi.org/10.4238/2013.April.2.20>

**ABSTRACT.** Endometriosis is a chronic gynecological disease defined as the presence of the endometrium outside the uterine cavity. Endometriosis is a multifactorial and polygenic disease in which angiogenesis may be implicated. Angiogenesis is under the control of numerous inducers, including vascular endothelial growth factor (VEGF). Many studies have reported that VEGF plays a role in the progression of the disease, but individually published studies showed inconclusive results. We investigated the association between VEGF polymorphisms and the susceptibility to endometriosis. The MEDLINE, EMBASE, Web of Science, and CBM databases were searched for all articles published up to June 25, 2012, which addressed VEGF polymorphisms and endometriosis risk. We investigated the

potential association between VEGF polymorphisms and the risk of endometriosis. Fourteen studies were included with a total of 3313 endometriosis cases and 3393 healthy controls. Meta-analysis results showed that the rs699947 (A>C) and rs1570360 (G>A) polymorphisms in the VEGF gene were associated with a decreased risk of endometriosis, while rs3025039 (C>T) might increase the risk of endometriosis. However, the rs833061 (T>C) and rs2010963 (G>C) polymorphisms of the VEGF gene did not appear to have an influence on endometriosis susceptibility. Results from the meta-analysis suggest that the rs3025039 (C>T) polymorphism of the VEGF gene increases the risk of endometriosis, but the rs699947 (A>C) and rs1570360 (G>A) polymorphisms might be protective factors for endometriosis.

**Key words:** VEGF; Polymorphism; Endometriosis; Meta-analysis