



***VEGF*, *eNOS*, and *ABCB1* genetic polymorphisms may increase the risk of osteonecrosis of the femoral head**

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ABSTRACT. We investigated the associations between vascular endothelial growth factors (*VEGF*), endothelial nitric oxide synthase (*eNOS*), and ATP-binding cassette subfamily B member 1 transporter (*ABCB1*) polymorphisms and the risk of osteonecrosis of the femoral head (ONFH). Published studies were reviewed and analyzed based on predefined selection criteria. The strength of the association between *VEGF*, *eNOS*, and *ABCB1* polymorphisms and ONFH risk was evaluated based on the odds ratio with corresponding 95% CIs. Meta-analysis was performed using the Comprehensive Meta-analysis 2.0 software. A total of 135 relevant articles were retrieved, of which 10 studies met the selection criteria, and included a total of 1025 patients with ONFH and 1730 healthy controls. The meta-analysis study results revealed that the *VEGF* rs2010963 G>C polymorphism increased the risk of ONFH, while the *VEGF* rs2010963 G>C and *ABCB1* rs1045642 C>T polymorphisms increased the risk of

ONFH under the allele model. In conclusion, the *VEGF*, *eNOS*, and *ABCB1* polymorphisms may contribute to ONFH, but further studies including larger sample sizes are needed to confirm the results.

Key words: ATP-binding cassette subfamily B member 1 transporter; Endothelial nitric oxide synthase; Osteonecrosis of the femoral head; Meta-analysis; Polymorphism; Vascular endothelial growth factor gene