Association of the g.27563G>A osteoprotegerin genetic polymorphism with bone mineral density in Chinese women

Y.P. Liu¹, D.W. Zhao², W.M. Wang², B.J. Wang¹,², Y. Zhang¹,² and Z.G. Li¹,²

¹Dalian University of Technology, Dalian, Liaoning Province, China
²Department of Orthopaedic Surgery, The Affiliated Zhongshan Hospital of Dalian University, Dalian, Liaoning Province, China

Corresponding authors: Y.P. Liu / D.W. Zhao
E-mail: yupeng_liu@sina.cn / dewei_zhao@sina.cn

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ABSTRACT. Osteoporosis is a common multifactorial disease in postmenopausal women. This study aimed to investigate the association of the g.27563G>A osteoprotegerin (OPG) genetic polymorphism with bone mineral density (BMD) and osteoporosis. A case-control study was carried out with 435 osteoporosis postmenopausal women cases and 442 age-matched healthy controls. The BMD at the femoral neck hip, lumbar spine (L2-4), and total hip were assessed by Norland XR-46 dual-energy X-ray absorptiometry. The genotypes of the g.27563G>A genetic polymorphism were detected by created restriction site-polymerase chain reaction and verified by DNA sequencing methods. We detected that the g.27563G>A genetic polymorphism was a non-synonymous mutation that resulted in an arginine (Arg) to glutamine (Gln) amino acid replacement
(p.Arg333Gln). Significant differences were found in the BMD of the femoral neck hip, lumbar spine (L2-4), and total hip among different genotypes of the g.27563G>A genetic polymorphism. Subjects with the genotype GG had significantly higher BMD values than those with genotypes GA and AA (P < 0.05). Our data indicated that the A allele of the g.27563G>A genetic polymorphism in OPG could be associated with lower BMD values in the Chinese postmenopausal women evaluated, and that it might be an increased risk factor for osteoporosis.

**Key words:** Bone mineral density; Osteoporosis; Osteoprotegerin gene; Genetic polymorphism; Risk factor; Chinese women