Association of T869C gene polymorphism of transforming growth factor-β1 with low protein levels and anthropometric indices in osteopenia/osteoporosis postmenopausal Thai women

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ABSTRACT. Osteoporosis is the most common metabolic bone disease; it is an important health problem among postmenopausal women. We evaluated the association of three polymorphisms, T869C, C-509T and G915C, of the TGF-β1 gene with bone mineral density (BMD) serum TGF-β1 levels in 278 postmenopausal female osteopenia/osteoporosis subjects and 95 postmenopausal female control subjects. Serum TGF-β1 levels were significantly lower in osteopenia/osteoporosis subjects than in control subjects. Serum TGF-β1 levels
of the CT+CC (T869C) genotype group were significantly lower in osteopenia/osteoporosis subjects than in control subjects (11.3 vs 15.8 ng/mL). There was a significant difference in the CT+CC (T869C) genotype frequencies between the osteopenia/osteoporosis and control subjects (74.18 vs 60.22%; OR = 1.90, 95%CI = 1.16-3.12). In the age group of more than 50 years, subjects with the TC+CC genotype of T869C polymorphism had significantly increased risk of osteopenic/osteoporotic bones at L1 (OR = 2.36, 95%CI = 1.37-4.07), L2 (OR = 1.71, 95%CI = 1.01-2.90), L3 (OR = 2.21, 95%CI = 1.23-3.98), L4 (OR = 1.74, 95%CI = 1.00-3.03) and the femoral neck (OR = 1.80, 95%CI = 1.04-3.12). The CT+CC genotype of the T869C polymorphism of the TGF-β1 gene was found to be associated with lower serum TGF-β1 in osteopenia/osteoporosis subjects and increased risk of osteopenic and osteoporotic fracture at L1-4, femoral neck and total hip in postmenopausal Thai women. Logistic regression analysis showed that T869C polymorphism is a significant risk factor for osteopenia/osteoporosis. We concluded that T869C polymorphism of the TGF-β1 gene has an impact on decreased serum TGF-β1 levels and influences susceptibility to osteopenia/osteoporosis in Thai women.

Key words: Osteopenia/osteoporosis; Transforming growth factor β1; Serum TGF-β1; Bone mineral density