Qari M H et al., Orthop Muscul Syst 2014, 3:2
http://dx.doi.org/10.4172/2161-0533.S1.018

OMICS Group Conferences
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3rd International Conference and Exhibition on
Orthopedics & Rheumatology
July 28-30, 2014 DoubleTree by Hilton Hotel San Francisco Airport, USA

Increased serum sclerostin and decreased serum IGF-1 are associated with vertebral fractures among postmenopausal women with Type-2 diabetes

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Insulin-like growth factor 1 (IGF-1) is a determinant of bone mass and is inversely associated with vertebral fractures (VFs). Sclerostin regulates bone formation by inhibiting Wnt/β-catenin signaling. Currently, there is little information on circulating sclerostin levels among postmenopausal women with type-2 diabetes mellitus (T2DM) with VFs in relation to serum IGF-1 (s-IGF-1). It was investigated the relationships between serum sclerostin, s-IGF-1, and VFs in postmenopausal women with T2DM. It was assessed cross-sectionally 482 postmenopausal women with T2DM and 482 age-matched postmenopausal women without T2DM who were recruited at diabetic clinics and primary health care centers for inclusion in a bone health survey. The main outcome measures were serum sclerostin, s-IGF-1, bone mineral density (BMD), and bone turnover markers. Lateral X-rays of the thoracic and lumbar spine were taken to diagnose VFs. Serum sclerostin levels were increased, whereas s-IGF-1 levels were decreased when T2DM women were stratified by the number of VFs (P<0.0001). Multiple logistic regression analysis showed that serum sclerostin levels were positively associated with 1 VF (odds ratio [OR]=1.27, (95% CI:1.01-2.03), P=0.016), 2 VFs (OR=1.41, (95% CI:1.03-2.36), P=0.006), and ≥3 VFs (OR=1.54, (95% CI:1.12-2.44) P=0.005). s-IGF-1 levels were inversely associated with 1 VF (OR=0.58, (95% CI:0.39-0.88), P=0.041), 2 VFs (OR=0.42, (95% CI:0.21-0.90), P=0.012), and ≥3 VFs (OR=0.19, (95% CI: 0.14-0.27), P<0.001). Increased serum sclerostin and decreased s-IGF-1 were associated with VFs among postmenopausal women with T2DM, suggesting that sclerostin and/or IGF-1 may be involved in increased bone fragility in T2DM and could be potential markers of VF severity.

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