OSTEOSCOOP

News on current events in osteoporosis and rheumatology

The effect of leptin on bone mineral density: young men too…

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Osteoporosis-related fractures constitute a major public health concern in women and men, and the fracture risk is highly dependent on bone mineral density (BMD). Although it is well established that obesity is a major risk factor for several common and severe diseases, the link between obesity and osteoporosis is less clear. A large body of evidence supports the notion that body weight is positively associated with areal BMD (aBMD) in both sexes and at all ages throughout adulthood, and negatively associated with fracture incidence. However, it remains a controversy whether it is lean mass or adipose tissue that mediates the bone stimulatory effect exerted by weight.

Recent experimental findings suggest that bone mass is regulated by the small polypeptide, adipocyte-derived hormone leptin. In humans, some cross-sectional studies have failed to show any association between serum leptin levels and aBMD in women or in men, whereas others have reported a positive association between leptin and aBMD. In a few recent studies in men, leptin was inversely correlated to aBMD, an association that became apparent only after adjustment of aBMD for body weight.

A recent study [1] conducted in Sweden in 1068 young men aimed to determine if lean mass, adipose tissue, and leptin were associated with BMD and cortical bone size in a large population. The independent role of leptin on bone parameters was studied using a multiple linear regression model, including age, total body lean mass and adipose tissue, height, present physical activity, calcium intake, and smoking as covariates. The results show that lean mass has a greater impact on bone mass than adipose tissue. Importantly, leptin was found to be a negative independent predictor of aBMD at several measured sites and of bone parameters reflecting cortical bone size.

This study is the first one to reveal the independent role of leptin on bone mineral density in young healthy men.

1. Lorentzon M et al. *J Bone Miner Res.* 2006;21:1871-1878.

Leptin control of bone mass

Experimental evidence that leptin is an important determinant of bone mass has come from studies in genetically modified mice. In the absence of leptin, bone mass increases, mainly as a result of increased bone formation.

In adult young men, leptin was shown to be an independent modulator of bone mineral density, negatively correlated to BMD.