

Bone Fragility in Asian and Caucasian Men

Y Duan,**MB, M Med, MD*, E Seeman,***MBBS, FRACP, MD*

Abstract

Hip and vertebral fractures are a public health problem in men of Asian and Caucasian origin. Inferences regarding gender and racial/ethnic differences in fracture rates must be made cautiously as problems in case ascertainment and classification of hip fractures, and problems in defining what constitutes a vertebral 'fracture' have not been solved. However, methodological issues probably do not entirely account for the heterogeneity of fracture patterns. There is likely to be a wide variation in fracture rates from country to country in Asia as reported in studies in Europe. The reasons for this heterogeneity are unknown.

Caucasian men lose similar amounts of bone as Caucasian women during ageing from the endosteal surface of the bone. Net bone loss is less in men than women because men form more periosteal bone during ageing than do women. The extent of periosteal and endosteal bone modelling and remodelling have not been studied in Asian men and women. Nor have there been hypothesis-driven studies designed to compare periosteal apposition and endosteal bone loss in Asian males compared to Caucasian males.

Sex hormone deficiencies contribute to abnormalities in skeletal size and mass during growth, remodelling imbalance and bone loss during ageing in men. The larger peak bone size and greater periosteal apposition with ageing in men compared to women is most likely to be androgen-dependent in Caucasians and Asians. Androgen deficiency may also partly account for reduced bone formation and negative bone balance at the basic multicellular unit (BMU). Oestrogen deficiency during growth is associated with reduced bone mass and increased leg length in males and females. Oestrogen deficiency during ageing may account for trabecular bone loss in men by increasing remodelling rate. There have been no anti-fracture efficacy studies done in Asian males.

Studies on the pathophysiology of osteoporosis in males have given insight into the pathophysiology of osteoporosis in females. Similarly, collaborative research efforts between groups around the world will facilitate comparative studies in Asian and Caucasian communities. The results of this work will provide important insights into the pathophysiology of bone fragility in both groups.

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* Research Fellow

** Associate Professor

Department of Endocrinology and Medicine

Austin & Repatriation Medical Centre, The University of Melbourne, Australia

Address for Reprints: Dr Yunbo Duan, Department of Endocrinology, Austin and Repatriation Medical Centre, Heidelberg, Melbourne, 3084, Australia.

E-mail: yunbo@austin.unimelb.edu.au