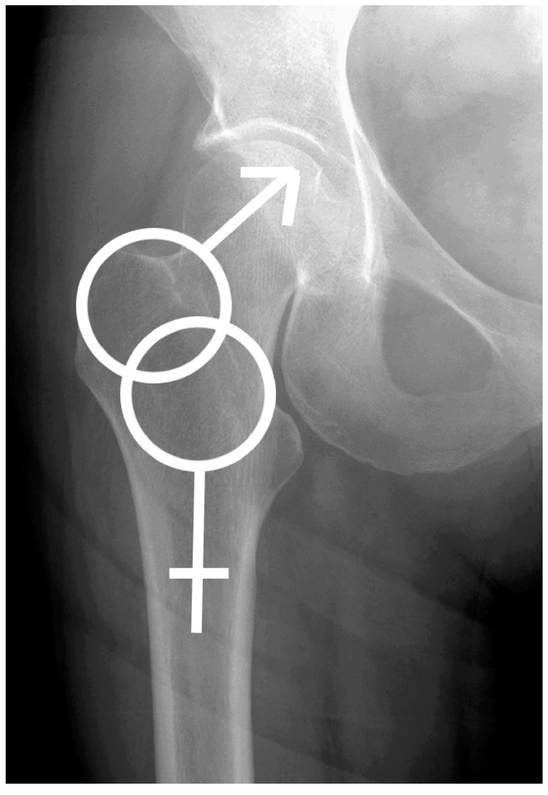
AAOS

American Academy of Orthopaedic Surgeons

Women's Health Issues Advisory Board

SEX...in Your Orthopaedic Practice

HIP FRACTURES: GENETICS AND ESTROGEN



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MOST RESEARCH STUDIES ON OSTEOPOROSIS AND HIP FRACTURE HAVE BEEN CONDUCTED EXCLUSIVELY ON WOMEN. What is known about managing hip fractures in women may not directly apply to men. Moreover, there may be unrecognized sex differences with regards to prevention of osteoporosis and hip fracture. This exhibit considers the role of genetics in both the prediction of hip fractures and in such sex differences. Specifically, the potential role of **COL I protein** and **estrogen receptors** relative to osteoporosis and hip fracture are discussed.

THERE IS LITTLE RESEARCH ON THE RELATIONSHIP BETWEEN ESTROGEN RECEPTORS AND HIP FRACTURE. Only two citations were identified in a literature search looking at hip fracture and estrogen receptors.. Only one study included men. Furthermore, both studies also looked at multiple conditions which may be influenced by the estrogen receptor including risk of cardiovascular disease and cancer. A study analyzing only estrogen receptor genetics and risk of hip fractures has not been completed to date. **Future studies may indicate that estrogen receptor genetics play a role in hip fracture differences between men and women.**

A literature search on hip fracture and COL I genetics garnered 19 citations. Of the 19 citations, 16 of these studies included only women. Six of these studies included both men and women and investigated the effect of COL I protein on hip fracture.

COL I ALPHA 1 RECEPTOR GENE HAS BEEN LINKED TO THE RISK OF HIP FRACTURE IN ELDERLY WOMEN. One study found the associated genotype COLIA1 TT genotype was associated with a risk of hip fracture in Caucasian women, independent of BMD and age. (J Clin Endo Metab; 2005 Dec; 90(12): 6575-9 EPUB 2005 Sept 13). However, no information was given for men, as they were not included in the study.

FURTHER RESEARCH IS NEEDED TO DETERMINE THE ROLE OF GENETIC MARKERS IN PREDICTING SUSCEPTIBILITY TO HIP FRACTURE. IDENTIFICATION OF INDIVIDUALS AT HIGHER RISK OF HIP FRACTURE WILL ALLOW THE DEVELOPMENT OF TARGETED PREVENTION TREATMENTS.