Medical Xpress

Genetic factor in osteoporosis discovered

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A genetic factor in osteoporosis has been discovered. Credit: SINC

Spanish researchers have confirmed there is a genetic risk factor for osteoporosis and bone fractures. Although more studies are still needed, these findings will make it possible to take preventive measures.

Scientists from the University of Barcelona (Spain) have discovered that the genetic variant 677C>T (a single nucleotide polymorphism (SNP) that is very well known in genetic studies) is linked to osteoporotic vertebral fractures, which many women suffer from after the menopause.

"In this genetic variant, the women that displayed a TT combination (or genotype) had double the risk of suffering from osteoporotic fractures than women with the other possible combinations (CT and CC)", Susana Balcells and Daniel Grinberg, lead authors of the study and researchers

at the UB, tell SINC.

The new study, published in the journal *Calcified Tissue International*, reveals that osteoporotic vertebral fractures can now be added to the list of illnesses (including Alzheimer's disease and cardiovascular disease) that are related to 677C>T.

The problem is that the variant confirmed is one of perhaps 100 that entail a heightened risk of osteoporosis. Analysing them individually is of limited predictive value, and experiments need to be carried out. "This is why we're asking diagnostic laboratorios to be prudent", the authors explain.

SNPs are polymorphisms that affect a single nucleotide in the DNA sequence. There are two possible versions in human populations (alleles) for each SNP. In order to find genetic factors linked to susceptibility to common illnesses, these variants must be analysed. There are around 10 million SNPs in the human genome, spread throughout all the chromosomes.

Anyone can break a hip

Osteoporosis is the most common form of bone disease. The human organism is not able to build enough new bone, and old bone is absorbed by the body. One in every three women and one in every 12 men aged over 50 have osteoporosis, an illness that causes millions of bone fractures each year. Post-menopausal women, who have reduced levels of oestrogen and other hormonal deficits, are most at risk.

Bone loss starts from the age of 35. Calcium and vitamin D deficiency, tobacco, alcohol and caffeine consumption and a sedentary lifestyle all raise the risk of osteoporosis. According to the experts, sports and calcium supplements before the menopause can help to maintain bone

mass. In some cases, hormonal patches can be used, as long as this is done under strict gynaecological supervision.

More information: Lidia Agueda, Roser Urreizti, Mariona Bustamante, Susana Jurado, Natalia García Giralt, Adolfo Díez-Pérez, Xavier Nogués, Leonardo Mellibovsky, Daniel Grinberg, Susana Balcells. "Analysis of Three Functional Polymorphisms in Relation to Osteoporosis Phenotypes: Replication in a Spanish Cohort". Calcif Tissue Int (2010) 87:14-24, July 2010. DOI:10.1007/s00223-010-9361-4

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