Homocysteine Raises Risk of Osteoporosis

Although preventable, osteoporosis or "brittle bones" afflicts one of every two American women and one of every four American men over the age of 50. A new study suggests a clear link between osteoporosis and high blood levels of the amino acid homocysteine.

The complications of osteoporosis take the form of noticeable height loss and fractures of the hip, spine, and wrist. Osteoporosis is implicated in more than 300,000 hip fractures in the US each year; of those affected, approximately 25% will die within one year and another 25% will no longer be able to walk without assistance.

Homocysteine is involved in methionine metabolism, and normally is recycled into methionine or converted into cysteine. An excessive accumulation of homocysteine in the body, however, entails a heightened risk for heart disease and stroke, among other diseases.

In the study, 2,406 men and women over the age of 55 were followed prospectively. Those with homocysteine levels in the highest quartile had twice the risk of osteoporotic fracture compared to those in the other three quartiles. This increased risk is comparable to that of acquiring cardiovascular disease or dementia for those with high levels of homocysteine.

In a second study of 1,999 men and women recruited as part of the Framingham Study, men whose homocysteine levels placed them in the highest quartile were nearly four times more likely to sustain an osteoporotic fracture compared to other subjects. Women whose homocysteine placed them in the highest quartile were twice as likely to sustain a fracture as other female subjects.

Dietary supplementation with folate and vitamins B6 and B12, even in the absence of measurable deficiencies of these nutrients, helps lower homocysteine levels and may help protect against osteoporosis.

—Dean S. Cunningham, MD, PhD

References