



Raw food vegetarians have low bone mass, but may be healthy

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Vegetarians who don't cook their food have abnormally low bone mass, usually a sign of osteoporosis and increased fracture risk. But a research team at Washington University School of Medicine in St. Louis also found that raw food vegetarians have other biological markers indicating their bones, although light in weight, may be healthy.

The study, published in the March 28 issue of the Archives of Internal Medicine, was led by Luigi Fontana, M.D., Ph.D., research instructor in medicine in the Division of Geriatrics and Nutritional Science. Fontana and colleagues studied 18 strict raw food vegans ages of 33 to 85. All ate a diet that not only lacked animal products but also included only raw foods such as a wide variety of vegetables, fruits, nuts, seeds, sprouted grains and legumes, dressed with olive oil. They had been on this diet for an average of 3.6 years.

The researchers compared them to people who ate a more typical American diet, including refined carbohydrates, animal products and cooked food. The groups were matched according to age, sex and socioeconomic status. In both groups, Fontana's team measured body mass index, bone mass, bone mineral density, markers of bone turnover, levels of vitamin D and inflammatory markers such as C-reactive protein and insulin-like growth factor 1 (IGF-1).

Those on the raw food diet had lower body mass indices and significantly lower bone mass in important skeletal regions such as the hip and lumbar spine, sites where low bone mass often means osteoporosis and fracture risk. But they didn't have other biological markers that typically accompany osteoporosis.

"For example, it is clear from research that higher rates of bone turnover equate to higher risk of fracture," Fontana says. "But in these people, although their bone mass is low, their bone turnover rates are normal."

The raw food group also had less inflammation, indicated by low levels of C-reactive protein, which is made by the liver as a response to inflammation in the body. They also had lower levels of IGF-1, one of the most important growth factors regulated by calorie and protein intake. High levels of IGF-1 have been linked to risk of breast cancer and prostate cancer.

And in spite of the fact that the raw food group didn't drink milk or eat cheese, they had higher vitamin D levels than people on a typical, Western diet. Fontana attributes the vitamin D levels to sun exposure.

"These people are clever enough to expose themselves to sunlight to increase their concentrations of vitamin D," he says. "I thought vitamin D might be a problem for them, but it was not."

Fontana also measured levels of the hormone leptin, which seems to play an important role in the regulation of bone metabolism. In some transgenic mice, low leptin levels are related to high bone mass. But interestingly, the raw food dieters had both low levels of leptin and low bone mass.

In short, the people on the raw food diet are lighter with lower body fat. They have less bone, but they have normal markers of bone turnover, higher-than-normal vitamin D and very low levels of

leptin and inflammatory markers.

So are their bones healthy or not? Fontana says he's not sure. Current clinical measurements would indicate that many in this group have osteoporosis or less severe bone loss called osteopenia. But with low levels of inflammation, normal bone turnover and high vitamin D, Fontana says the usual clinical parameters may not apply.

"For example, post-menopausal, frail women with osteoporosis have low bone mass and an increased risk of fracture," he says. "But they also have increased circulating levels of inflammatory molecules called cytokines. That's a different biologic condition from what we are seeing in the raw food vegans."

So he is proposing the hypothesis that in spite of their low bone mass, those on raw food diets actually may have a good bone quality and, therefore, healthy bones.

"I base that hypothesis on the fact that their bone turnover markers are normal, vitamin D is higher than normal and inflammation is low," he says. "We think it's possible these people don't have increased risk of fracture but that their low bone mass is related to the fact that they are lighter because they take in fewer calories."

Fontana says more study is needed to prove that raw food vegans have light-but-healthy bones. One study could involve following large groups of them for years to look at fracture rates. Other, more imminent studies will involve using micro MRI to get a 3-D look at bone architecture and structure. Those studies could begin soon.

In the meantime, Fontana isn't telling people to follow such an extreme diet.

"I think over the long term, a strict raw food vegan diet could pose some health problems," he says. "But it's not my role to tell them to eat differently. I'm simply interested in learning about the positive and/or detrimental health effects of this diet."

"However," he concludes, "if someone wishes to improve their health and reduce their risk of cardiovascular disease and cancer, I would definitely suggest that they get away from the refined and processed foods that Americans usually eat and try to eat a wide variety of nutrient-dense foods, such as vegetables, fruits, whole grains, legumes and fish."

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