Menopausal Status Affects BMD/CRP Link

BY KERRI WACHTER

DENVER — Menopausal status appears to modify the relationship between inflammation and bone mineral density, on the basis of findings from the Framingham Osteoporosis Study.

Postmenopausal women on estrogen replacement therapy (ERT) with higher levels of C-reactive protein—a measure of systemic inflammation—had greater bone mineral density (BMD) at the femoral neck than did those in the same group with lower CRP levels, Dr. Robert R. McLean and his coinvestigators reported in a poster at the annual meeting of the American Society for Bone and Mineral Research. In contrast, in premenopausal women, increased CRP levels were associated with a decrease in BMD at the trochanter.

The Framingham Heart Study Offspring Cohort enrolled 5,124 children and spouses of the original Framingham cohort. From 1996 to 2001, BMD was measured in 3,035 offspring in the Framingham Osteoporosis Study. Fasting blood samples were collected from 2,095 of them during 1998-2001. C-reactive protein levels were measured after BMD in 72% of participants, with a median time between assessments of 1.4 years.

BMD was measured at the right femoral neck and trochanter, and at the lumbar spine. Other variables obtained at the time of BMD measurement included age, height, weight, physical activity, smoking status, and use of NSAIDs. In women, menopause status, current ERT use, and years since menopause were recorded. Separate analyses were performed for the 1,291 men, 229 premenopausal women, 497 postmenopausal women using ERT, and 888 postmenopausal women not us-

Obese Women Underscreened For Osteoporosis

WASHINGTON— Obese women are less likely to be screened for osteoporosis than are normal- or overweight women, according to a study of more than 140,000 patients in an integrated health care plan database.

Previous studies showed mixed results on the disparity in preventive health care for obese patients, compared with normal-weight patients, said Kristi Reynolds, Ph.D., and colleagues, of Kaiser Permanente, Pasadena, Calif.

"It is largely unknown whether obesity is associated with the quality of care for osteoporosis, which is both preventable and treatable but is often undiagnosed and untreated," the researchers said. Physicians may be less inclined to screen obese women for osteoporosis because body weight is associated with higher bone density, they noted.

Data from 146,975 health care provider visits between July 1, 2007, and June 30, 2008, were reviewed.

Average age was 73 years; 35% were normal weight; 35% were overweight; and 19%, 7%, and 4% fell into obesity categories I, II, and III, respectively. Normal weight body mass index was defined as 18.5-24.9 kg/m^2; overweight as 25-29.9 kg/m^2; obese class I as 30-34.9 kg/m^2, class II as 35-39.9 kg/m^2, and class III as 40 kg/m^2 or higher.

About 67% of the women had undergone bone mineral density testing within 4 years of the study, the criteria by which participants were considered "screened." Only 52% of women with a BMI of 40 kg/m^2 or higher were screened, compared with 68% each of the normal BMI women and overweight women, 67% of those with a BMI of 30-34.9 kg/m^2, and 63% with a BMI of 35-39.9 kg/m^2.

After adjustment for age, race, and income, the odds ratio of osteoporosis screening for overweight women was 0.99, while the ratios for women in obese classes I, II, and III were 0.90, 0.77, and 0.60, respectively. The findings were presented in a poster at the the annual meeting of the Obesity Society.

The results suggest that many overweight and obese women aren't screened for osteoporosis, said the researchers, who reported having no conflicts of interest.

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ing ERT. Analyses were adjusted for age, height, weight, physical activity, and smoking status, with additional adjustment for NSAID use.

Median CRP levels were higher for postmenopausal women (3.9 mg/L for those on ERT and 2.3 mg/L for those not on ERT) than for men (1.9 mg/L) or for premenopausal women (1.4 mg/L). In all, 74% of men, 62% of premenopausal women, 86% of postmenopausal women on ERT, and 77% of postmenopausal women not on ERT had CRP levels of at least 1 mg/L.

CRP level was not associated with BMD in men or in postmenopausal women using ERT. However, in those women, there was a significant association between years since menopause and BMD at all three sites. The researchers repeated the analysis for women fewer than 10 years past menopause and those at least 10 years past menopause. "The association of CRP with femoral neck BMD tended to be negative for those less than 10 years past menopause and positive for those at least 10 years past menopause, while there was no significant association at the trochanter or lumbar spine," they wrote.

For postmenopausal women not using ERT, those with CRP levels of at least 1 mg/L had 2.5% greater BMD at the femoral neck, compared with the lower CRP level group, a significant difference. However, there were no significant associations at the trochanter or lumbar spine. "Contrary to our hypothesis, greater inflammation may be associated with higher BMD among postmenopausal women not using ERT," wrote Dr. McLean, who is a researcher at the Institute for Aging Research, a research affiliate of Harvard Medical School, Boston.

In premenopausal women, CRP level was not associated with BMD at the femoral neck or the lumbar spine. However, each unit increase in CRP was associated with 0.005 g/cm^2 lower BMD at the trochanter, which was statistically significant. "Our findings suggest increased systemic inflammation may be a risk factor for lower BMD among premenopausal women, although this was not consistent across bone sites."

Preclinical studies have suggested that proinflammatory cytokines play a role in bone resorption, but the impact on BMD is not clear.

Dr. McLean reported that he has no relevant financial relationships. ■