

# Check BMD After 3 Months of Amenorrhea

BY BRUCE JANCIN

FROM THE ANNUAL MEETING OF THE AMERICAN SOCIETY FOR REPRODUCTIVE MEDICINE

DENVER – The Study of Women's Health Across the Nation has filled important knowledge gaps regarding bone loss rates at various stages of the menopausal transition, enabling physicians for the first time to make informed decisions about the appropriate time to screen for osteoporosis.

"Hypoestrogenic bone loss does not occur until the late transition. Duration of amenorrhea is the best predictor of when this process begins. There's no rationale to measure bone mineral density prior to 90 days of amenorrhea if postmenopausal osteoporosis is the

clinical issue," Dr. Nanette F. Santoro explained at the meeting.

"Bone mineral density at the lumbar spine and total hip starts dropping like a stone as soon as the women get to late menopause, so 3-11 months of amenorrhea is the tipping point for bone density. There is no point in assessing it sooner if you think they may have bone loss related to the menopause transition, because it's not going to be estrogen-related prior to this point," said Dr. Santoro, a long-time SWAN (Study of Women's Health Across the Nation) investigator and chair of obstetrics and gynecology at the University of Colorado at Denver.

The SWAN findings have important clinical implications because most guidelines don't recommend routine screening of women for osteoporosis until age 65. That's too late. Since the rate of BMD loss accelerates markedly in late menopause, accompanied by an attendant increase in fracture risk, it makes sense to measure bone mineral density after a woman has experienced 3 months of amenorrhea, and to intervene if she is beginning to lose bone rapidly, she continued.

SWAN showed that the annual rate of bone loss during the late perimenopausal and early postmenopausal years is 1.8%-2.3% in the lumbar spine and 1.0%-1.4%

in the hip. At those rates, 5 years of bone loss would translate to a 7%-10% drop in BMD at the spine in the average woman, along with a 5%-7% decline at the hip. And that in turn foretells a 50%-100% higher fracture rate.

**'There's no rationale to measure bone mineral density prior to 90 days of amenorrhea if postmenopausal osteoporosis is the clinical issue.'**

Another key SWAN finding regarding BMD changes during the menopausal transition is that rates of bone loss are markedly greater in women who are in the lowest tertile of body weight. Indeed, women in the top tertile for body weight had a 33%-55% slower rate of bone loss than did those

in the lightest tertile. The apparent large ethnic differences in bone loss rates observed in SWAN turned out on closer inspection to be explained chiefly by ethnic differences in body weight.

SWAN is a long-term, longitudinal, observational study involving 3,302 women who were pre- or early perimenopausal at enrollment.

Participants were recruited from five ethnic groups – white, black, Hispanic, Japanese, and Chinese – at seven U.S. sites. The BMD substudy included 1,902 SWAN participants with BMD measurements obtained at up to six annual visits. The key findings of the BMD substudy have already been published (*J. Clin. Endocrinol. Metab.* 2008;93:861-8). Dr. Santoro, in her plenary lecture at the meeting, sought to spread the word. ■

## VITALS

**Major Finding:** The annual rate of bone loss during the late perimenopausal and early postmenopausal years is 1.8%-2.3% in the lumbar spine and 1.0%-1.4% in the hip. At those rates, 5 years of bone loss would translate to a 7%-10% drop in BMD at the spine in the average woman, along with a 5%-7% decline at the hip.

**Data Source:** SWAN, a long-term, longitudinal, observational study of 3,302 women from five ethnic groups at seven U.S. sites who were pre- or early perimenopausal at enrollment.

**Disclosures:** Dr. Santoro declared having no financial interests relevant to the National Institutes of Health-funded study.

# Visceral Obesity Linked to Osteoporosis Before Menopause

BY SUSAN BIRK

FROM THE ANNUAL MEETING OF THE RADIOLOGICAL SOCIETY OF NORTH AMERICA

CHICAGO – Visceral obesity was associated with low bone mineral density in a study of premenopausal women, indicating that abdominal fat is a risk factor for osteoporosis.

The finding indicates that "obesity does not always protect against osteoporosis," study investigator Dr. Miriam A. Bredella said in a press briefing at the meeting.

"Excessive visceral fat is not only a risk factor for heart disease and diabetes, but also for bone loss," she said.

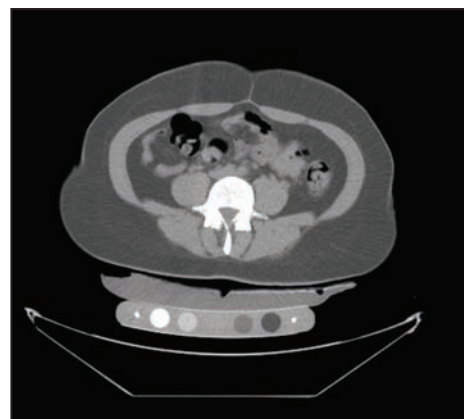
The study flies in the face of current thinking that obesity actually protects against osteoporosis. Previous studies suggesting a link between fat and bone health focused primarily on body mass index (BMI), which incorporates measures of muscle and bone mass and

subcutaneous fat as well as visceral fat.

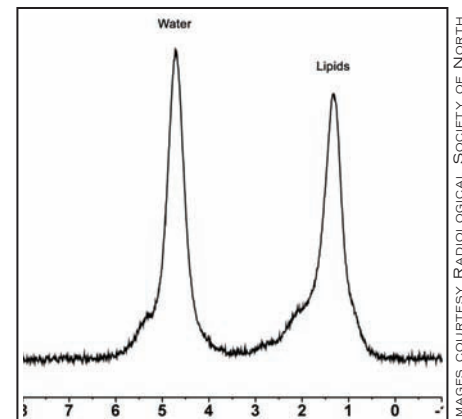
The present study zeroed in specifically on visceral fat, Dr. Bredella explained.

She described "disturbing pictures emerging from the obesity epidemic, because the number of forearm fractures among young patients has increased dramatically over the last year, and the strongest risk factor in that group ... was actually increased body weight." This finding prompted the investigators to see whether there was a connection between osteoporosis and fat, said Dr. Bredella of Massachusetts General Hospital and Harvard Medical School, both in Boston.

In the present study, 50 premenopausal women with a BMI of 19-46 kg/m<sup>2</sup> (mean 30) underwent a magnetic resonance spectroscopy exam to assess L4 bone marrow (BM) fat, followed by quantitative computed tomography to



CT scan of the abdomen through the L4 in an obese woman (left) shows high levels of visceral fat. Further analysis (right) showed high bone marrow fat content.



IMAGES COURTESY RADIOLOGICAL SOCIETY OF NORTH AMERICA

assess trabecular bone mineral density (BMD).

The results showed a positive correlation between visceral fat and BM fat ( $r = 0.28$ ) and an inverse association between visceral fat and BMD ( $r = -0.31$ ) and between vertebral BM fat and BMD ( $r = -0.45$ ). These results were statistically

significant. There was no correlation between either subcutaneous fat (fat concentrated around the hips and thighs) or total body fat and either BM fat or BMD.

These results reveal the distinctly detrimental effect of abdominal obesity on bone health, Dr. Bredella said.

The study is among the first to explore the relationship between body fat and bone marrow fat, and the dynamic appears to be complex, she said in an interview.

According to recent research, "the amount of fat within your bones could predict if you will develop a fracture independent of bone mineral density," she noted. A recent study by Dr. Bredella and her colleagues found that women with anorexia nervosa had three times the amount of bone marrow fat as did normal-weight women.

Dr. Bredella had no financial disclosures. ■

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