EDITORIAL

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In rebuttal: Osteopenia is a useful diagnosis

IN THIS MONTH'S ISSUE of the *Cleveland Clinic Journal of Medicine*, Dr. Nelson Watts replies to a reader's question: "What is osteopenia, and what should be done about it?"[1]

See related article, page 29.

Although we agree with some of Dr. Watts' statements about the uses and misuses of bone mineral density testing and T scores, we emphatically disagree with his central argument, ie, that osteopenia is not useful as a diagnosis and can actually be harmful. (In fact, he says he is "on a personal crusade" to eliminate it from the lexicon.) Our concern is that his approach is not evidence-based, is not supported by recommendations and guidelines from professional societies, and, most importantly, might foster complacency and a do-nothing attitude toward a serious disease.

Underdiagnosis of bone disease is a bigger problem than overdiagnosis

OSTEOPOROSIS IS SERIOUS

If there is to be a crusade, it should be to eliminate osteoporosis and low bone density and their associated fractures. Osteoporosis is epidemic, as noted by a recent report from the US surgeon general,[2] who has declared this the "Decade of the Bone and Joint." By 2020, more than 61 million Americans will have osteopenia or osteoporosis.

Although osteoporosis is not exclusively a women's health disease, it is a major women's health problem, as over 50% of all white postmenopausal women are affected, and 80% of all fragility-related fractures occur in women.

'OSTEOPENIA' IS AN ACCEPTED TERM

The term "osteopenia" (which Dr. Watts recommends replacing with "low bone density" or "low bone mass") is ingrained in the medical and lay literature and describes a condition of bone in which decreased calcification, decreased density, or reduced mass occurs. The Mayo Clinic Web site states that osteopenia is a progressive loss of bone and bone thinning. An Ovid Medline search for the term osteopenia cites 37,293 references, of which 7,547 are review articles.

We have no problem with using "low bone density"—but not low bone *mass*, which implies a knowledge of architecture that dual energy x-ray absorptiometry (DXA) and ultrasonography do not supply.

Osteopenia describes the common finding on radiographs that should alert the clinician to an underlying bone pathology, whether it is osteoporosis or multiple myeloma. Understanding the technical factors that can produce the appearance of osteopenia is essential to the correct observation.

USES AND MISUSES OF TESTING

We agree with Dr. Watts' comments that the International Society for Clinical Densitometry (ISCD)[3] recommends that T scores not be used in premenopausal women or in younger men, and certainly not in children, and that any system that has an arbitrary cut point will inevitably misclassify some patients. He suggests that it is helpful for clinicians to think categorically in terms of normal vs osteoporosis. However, eliminating the in-between gray zone and coming up with his own personal recommendations that deviate from those of

national societies is not helpful.

Follow-up testing of bone mineral density should be done when the expected change in density exceeds or equals the least significant change, which depends on the center in which the testing is performed, the instrument used, and the treatment that the patient is prescribed. Dr. Watts recommends that patients in the lower part of the osteopenic T-score range (–2.0 to –2.50) be monitored every year or two. This should be based on whether the change in bone mineral density is expected to equal or exceed the least significant change.

Dr. Watts further states that postmenopausal women in the upper osteopenic range of T scores (–1 to –1.5) should "usually" be reassured and monitored perhaps every 5 years or so. This recommendation is not evidence-based.

The critical question is: What is the patient's baseline bone density? If we have only one measurement to go on, it *is* the baseline, and the clinician does not know what the peak or pre-existing bone mineral density was. Therefore, a woman with a T score of –1.3 who 3 years ago had a normal bone mineral density on the same machine could have sustained significant bone loss, whereas a woman whose peak density was 2 standard deviations below normal and who maintained this bone density is not experiencing rapid bone loss and, we agree, would not need to be scanned sooner.

Bone mineral density is not the only factor

Bone mineral density is a very important determinant of fracture risk but does not say anything about architectural bone qualities that are part of bone strength. Thus, bone mineral density cannot be the sole determinant of treatment thresholds. Nevertheless, central DXA remains the gold standard for the diagnosis of postmenopausal osteoporosis, as set by World Health Organization (WHO) criteria.[4] The ISCD has issued guidelines on interpreting bone densities, which we recommend that all readers adhere to.[3]

However, using a T score (derived from young female adults) of –2.5 or lower as the cut point for osteoporosis in postmenopausal women misses too many women who are at risk for fractures; hence the need for more detailed bone risk assessment.

The National Osteoporosis Risk Assessment (NORA)[5] revealed that postmenopausal women with peripheral T scores of –1.7 or less were at particular risk for fracture. So other factors, such as age when combined with T scores and history, can further quantify fracture risk and hence treatment thresholds.

WHAT ABOUT THE PATIENTS?

Dr. Watts illustrates his approach with five brief cases. Most disturbing to us is that his approach seems to be, in four of the five cases, to do nothing.

A 35-year-old woman who is premenopausal and who runs marathons has had stress fractures in her foot. DXA of the spine and hip reveals a lowest T score of –1.1. Dr. Watts asserts that her stress fractures are "almost certainly due to repeated mechanical forces rather than systemic skeletal disease," and that bone densitometry was not indicated for her.

We agree that when DXA studies are done in young women, men, and children, Z scores should be reported and not T scores. However, without more information, we cannot dismiss this patient's stress fractures as due to mechanical forces as opposed to systemic skeletal disease. What is her hormonal status? Has she had prolonged amenorrhea? Has she been on depot medroxyprogesterone acetate for contraception? Did someone evaluate the condition of her running shoes? Has she had an undiagnosed or previously treated eating disorder?

Osteopenia should alert the clinician to an underlying bone pathology

By focusing only on the bone density we may miss a critical time to intervene in promoting not only bone health but overall health.

A 52-year-old woman who just started menopause and has no other risk factors for osteoporosis undergoes DXA, which reveals a lowest T score of –1.3. Dr. Watts says that bone mineral density testing was not indicated.

However, osteoporosis is a largely preventable complication of menopause.[6] From 13% to 18% of all US women aged 50 and older have osteoporosis, and another 37% to 50% have osteopenia. A number of approved options exist to prevent and treat osteoporosis, and the knowledge of bone status in a recently menopausal woman may affect her decision regarding hormone therapy or other agents.

Not all postmenopausal women have estrogen deficiency. And Dr. Watts stacks the deck in this case scenario—as he did in several others—by stating the patient has no other risk factors for osteoporosis. In the real clinical world, it is important to carefully search for risk factors. One cannot conclude that a postmenopausal woman is not at risk for osteoporosis without detailed information about her race, hormonal status, family history of osteoporotic fractures, smoking history, body weight, dietary intake of calcium and vitamin D, ingestion of alcohol, medication use, physical activity, fall risk, and vision status, as well as a complete examination that includes a pelvic examination to assess for vaginal atrophy, a marker of estrogen deficiency.

A 57-year-old woman undergoes an ultrasound test of the heel at a health fair, which shows a T score of –1.7. Dr. Watts' recommendations are so vague as to be meaningless. On one hand, he states a DXA should be done "if there is concern about the implications of the abnormal ultrasound test." On the other hand, he suggests she probably can wait until age 65 to have a central bone density study "because she has no risk factors."

Osteoporosis guidelines are available at www.nof.org

We are definitely concerned about the implications of the abnormal ultrasound test and strongly believe she should be referred for a central DXA scan to ascertain her bone mineral density, as well as a detailed search for risk factors. As Dr. Watts admits, with a T score of –1.7 in the heel, she could actually have osteoporosis of the hip or spine.

A 66-year-old woman has a DXA T score of –1.8. Dr. Watts recommends no therapy at this time, and that she repeat the DXA in 3 to 5 years.

However, her risk for fracture is actually greater than for a 50-year-old woman with a T score of –2.5.[4] Age is a powerful risk for fracture,[7] and in view of the fact that more women have fractures in the osteopenia category than in the osteoporosis category, assessment and pharmacologic therapy should be strongly considered. Even if she does not start drug therapy, she should have a repeat central DXA scan within 2 years if only to assess for stability.

A 76-year-old woman has lost 3.5 inches in height and has a T score of –2.3. Although Dr. Watts appropriately diagnoses osteoporosis, he still hedges on whether treatment is appropriate.

As recommended by the National Osteoporosis Foundation,[8] all postmenopausal women with T scores of –2.0 or worse should be considered for pharmacologic therapy, and all postmenopausal women with T scores of –1.5 or greater with the risk should also be considered.

NO COOKBOOK MEDICINE

Although we do not ascribe to cookbook medicine, the guidelines as set forth by multiple organizations including the National Osteoporosis Foundation, the ISCD, WHO,[8] the surgeon general,[2] and the American College of Obstetricians and Gynecologists[6] are very helpful in terms of screening evaluation, management, and follow-up.

We acknowledge the problem of healthy people being labeled with osteopenia and being given inappropriate treatments (such as an asymptomatic premenopausal woman being given bisphosphonates). However, there is a much greater problem of those at high risk for fractures (such as those with established osteoporosis, or with low bone density, or osteopenia) being underdiagnosed and denied treatment with the evidence-based therapies that have been shown to reduce that risk.

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