Bone Density Screening Guides: Experts Offer Conflicting Views

BY COLIN NELSON
Contributing Writer

BOSTON — There has been little consensus among organizational guidelines in the past 5 years about who should be screened for low bone density.

Recommendations range from very conservative to relatively liberal, said Edward Leib, M.D., director of the Osteoporosis Center at the University of Vermont, during a recent symposium on bone health sponsored by Boston University School of Medicine.

The decision to screen is important, since it can affect a patient's well-being and dictates how the health care system allocates billions of dollars.

For many clinicians, the decision is understandably murky. Evidence that bone scans prevent fractures is conflicting, and there is some evidence that screening may indirectly cause harm.

Screening guidelines issued by various organizations answer some questions and raise others. For instance, in 2002, the U.S. Preventive Services Task Force (USPSTF) published letter grade recommendations on osteoporosis screening after reviewing the literature on its diagnosis and treatment. Its evidence-based screening recommendations are among the most conservative to date, said Dr. Leib.

The Task Force noted that bone density screening is an imprecise science, and its accuracy and usefulness is dependent on variable technical and human factors.

Bone density scans lack meaningful predictive value, the Task Force also noted. They don't predict who will and who will not have a fracture. Moreover, if a test is positive, it is unclear what a clinician should do.

"There is little evidence regarding which patients are likely to benefit from screening and treatment," the Task Force concluded. "It is not known whether women who have a similar overall risk for fracture, but different bone densities, will benefit similarly from treatment. This is clinically important because the lack of accepted criteria for initiating treatment remains a problem."

The USPSTF also noted that there are several potential harms of screening, although "the empirical data for them are few."

The Task Force said potential harms from screening include an increased likelihood that a patient will need to receive hormone replacement therapy; increased patient fears and anxiety; inaccuracies and misinterpretations of bone density tests; increased risk for ulcer disease in patients taking alendronate (incidence 2.2% on alendronate vs. 1.2% on placebo); and unknown long-term harms of alendronate.

After considering all of these factors, the USPSTF recommended screening women aged 65 years and older, and women aged 60 years and older who have risk factors for osteoporosis.

The Task Force found insufficient evidence to recommend for or against routine screening in women aged 60 years and younger, or in women aged 60-64 years who are not at increased risk for osteoporotic fractures.

Bone densitometry screening guidelines generally agree that women aged 65 years and older should undergo bone density scans. But what do the guidelines say about younger women, men, and children? Researchers have yet to validate the reliability of screening guidelines in these groups (N. Engl. J. Med. 2005;353:164-71).

The current guidelines suggest that clinicians should take into account a number of risk factors before ordering bone densitometry for them. In women younger than 65, clinicians should consider fragility or low-trauma fracture, family history, and weight, among other things.

Dr. Leib said that his advice on osteoporosis screening is based on evidence and opinion. He recommends bone densitometry for the following individuals: women aged 65 years and older and men aged 70 years or older; postmenopausal women with risk factors for fracture; men aged 50 years or older with risk factors; routine screening of early postmenopausal women; and premenopasual women, children, or younger men with significant risk factors.

Dr. Leib is a consultant to Procter & Gamble and Merck Pharmaceuticals. He receives research support from Eli Lilly and NPS Allelix. ■

Bisphosphonate Beats Alfacalcidol in Bone Trial

BY BRUCE JANCIN
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VIENNA — Alendronate is markedly more effective than 1-hydroxyvitamin D_3 (alfacalcidol) as prophylaxis against glucocorticoid-induced osteoporosis, Johannes W.J. Bijlsma, M.D., Ph.D., said at the annual European congress of rheumatology.

He reported on 200 patients—40% men, the rest postmenopausal women—in an 18-month randomized double-blind 23-center Dutch trial that was sponsored by the Netherlands Health Council.

Total hip bone mineral density increased in the alendronate group, while declining with alfacalcidol.

DR. BIJLSMA

Participants had various rheumatic diseases for which they were placed on systemic steroids at a mean starting dose of 23 mg/day of prednisolone or its equivalent. Over 18 months their cumulative dose was nearly 6 g.

Patients were randomized at the outset of steroid therapy to 10 mg/day of alendronate plus placebo or 1 mcg/day of alfacalcidol, an activated vitamin D, plus placebo.

The primary study end point was change in lumbar spine bone mineral density over the 18 months. It increased by 2.3% in the alendronate group and decreased by 1.9% in the alfacalcidol group, for a net 4.2% difference between the regimens.

Similarly, total hip bone mineral density increased by 0.7% in the alendronate group, while declining by 2.5% with alfacalcidol, said Dr. Bijlsma, professor and head of the department of rheumatology and clinical immunology at University Medical Center, Utrecht, the Netherlands.

Three asymptomatic vertebral fractures occurred in three patients in the alendronate group, compared with 13 vertebral fractures in eight patients in the alfacalcidol group; 5 of them were in three patients who were symptomatic.

Glucocorticoid-induced osteoporosis is an enormous problem.

In various epidemiologic studies, 0.5%-1.7% of women over age 55 are on prolonged systemic steroid therapy, and 50% develop osteoporosis. One-third experience vertebral fractures. Marked trabecular bone loss, mainly due to reduced bone formation, is observed within the first 6 months of steroid therapy.

Bisphosphonates are known to protect against steroid-induced osteoporosis. Alfacalcidol was deemed worth studying as an alternative because activated vitamin D stimulates osteoblasts, thereby encouraging bone formation, Dr. Bijlsma explained at the meeting, sponsored by the European League Against Rheumatism. ■

School Exercise in Early Years Results in Bone Mass Increase

BY KERRI WACHTER
Senior Writer

NASHVILLE, TENN. — A school-based exercise program may be one way to head off osteoporosis later in life, according to results from a study presented at the annual meeting of the American Society for Bone and Mineral Research.

A school-based exercise program in early school years seems to be followed by a greater increase in bone mineral content (BMC) and bone size, said Christian Linden, M.D., of Malmö (Sweden) University Hospital.

The finding comes from the Pediatric Osteoporosis Prevention (POP) study, a prospective, controlled population-based study assessing the effects of daily exercise during early school years on the accrual of bone mineral.

A total of 121 children (73 boys and 48 girls) in grades 1 and 2 (average age 7.7 years) participated in 40 minutes of physical activity during each school day for 4 years. A control group of 100 age-, height-, and weight-matched children (52 boys and 48 girls) in nearby schools followed the standard Swedish physical education curriculum, consisting of 60-90 minutes of physical activity each week.

BMC was assessed using dual-energy x-ray absorptiometry measurements of the lumbar spine and the femoral neck at baseline and at yearly evaluations. The researchers also tracked duration of physical activity outside of school.

At baseline, there were no differences between the groups with regard to bone mass and size. At follow-up, the boys in the control group had a significantly higher Tanner stage on average; otherwise the children in the two groups were similar.

Boys who were in the intervention group had significantly greater BMC in the lumbar spine at follow-up after 4 years, compared with those in the control group (7.0 g vs. 6.2 g). Girls in the intervention group had significantly higher BMC at the lumbar spine (9.1 g vs. 7.1 g) and femora neck (0.39 g vs. 0.29 g) at follow-up than did those in the control group. The annual increase in femoral neck width was greater in the intervention group than in the control group for girls (1.23 mm vs. 1.07 mm) and boys (1.45 mm vs. 1.03 mm).

The findings support those from earlier studies suggesting that the best time to increase bone mineral accrual through exercise in is the prepubertal period. Approximately 30% of bone mass acquired over a lifetime can be influenced by nongenetic factors, such as exercise.

Exercise programs in early life show potential as a prevention strategy of osteoporosis, Dr. Linden concluded. ■

Exercise programs in early life could help counter the onset of osteoporosis.