

OSTEOPOROSIS: PREVENTION AND TREATMENT OF BRITTLE BONES

*A 61 year old woman came to my office complaining of severe low back pain that developed after lifting a bag of groceries. She thought that she had strained her back, but x-rays revealed something different. In fact, she had suffered a vertebral fracture, literally a broken back, which was due to underlying **osteoporosis**.*

"Impossible," she exclaimed, "it couldn't happen to me! I get plenty of exercise and get enough calcium in my diet. I even took estrogen for a year after menopause..."

Osteoporosis is a disease that gradually weakens bones and makes them fragile. It is usually a "silent disease" in postmenopausal women until they suffer a painful fracture. Fractures of the spine, wrist, or hip may occur from only a minimal stress such as coughing, rolling over in bed, or lifting a grandchild. These fractures may be disabling, and may threaten a woman's lifestyle, mobility and independence.

Osteoporosis affects 25 million Americans, 4 out of 5 are women. More than 1 million fractures due to osteoporosis occur every year. This is greater than the number of cases of heart attack, stroke and breast cancer, combined. At age 50, a woman has nearly a 40% risk of developing a fracture in her lifetime. 50% of people who fracture their hip lose their independence, and many have to be cared for in nursing homes.

How do I know if I have osteoporosis?

Certain factors are known to increase the risk for osteoporosis, including postmenopausal status, Caucasian race or Asian ethnicity, thin, small build, family history of osteoporosis, cigarette smoking and excess alcohol. Certain medications such as steroids, certain anticonvulsants, and excessive thyroid hormone also contribute to increased risk.

Leg weakness and unsteadiness greatly increases the likelihood of falling down. If a person does not fall, the risk of fracture is obviously less, regardless of whether a person has osteoporosis or not. Medical conditions such as Parkinson's disease, stroke, neuropathy, and visual difficulties greatly increase the risk of falling. If a person must use their arms to stand up from a chair, their legs are weak, and the risk of falling is increased.

The most reliable way to identify osteoporosis is by having a DEXA (dual energy x-ray absorptiometry) scan. This test measures bone density of the spine and hip, using a very low level of x-ray exposure, less than a chest x-ray or mammogram. Whereas tests of the heel and forearm are commonly offered at local pharmacies, they may be less reliable than the "gold standard" DEXA scan. It is safe, accurate, takes only a few minutes, and is usually covered by insurance, including Medicare.

The result of the DEXA scan is reported as a "T score," which is a comparison of the patient's bone density to that of a young adult of the same sex and race. A score of -1 or higher is considered normal. A score between -1 and -2.5 is known as "osteopenia," thin bone, and is a signal that osteoporosis may develop. A score of less than -2.5 is considered to be osteoporosis, where the risk of developing a fracture is considerably increased.

What can I do to prevent developing osteoporosis?

A person's skeleton continues to mature and gain density until about age 30. To achieve maximum bone density, a person usually must drink the equivalent of a quart of milk daily. Many

people do not drink that amount, so they may never achieve their peak bone mass. That person might then be more likely to develop osteoporosis in the future.

Before menopause, a woman needs about 1,000-1,200 mg calcium daily. After menopause (and without estrogen replacement therapy), the calcium requirement rises to 1,500 mg daily. Many people rely on calcium supplements if their dietary intake is low. Vitamin D is required for proper absorption of calcium. Vitamin D, the sunshine vitamin, is produced by the skin after 15 minutes of sun exposure, is added to milk and some cereals, and is in most multivitamins.

Exercise helps maintain bone strength as well. Every time we take a step, the force of impact of the heel with the ground travels all the way up the skeleton, through the hip and into the spine. This force is a stimulus for bone to maintain its strength. Thirty minutes of walking daily is suggested.

Are prescription medications helpful?

Menopause may be considered a hormone deficiency condition. Although the benefits of hormone replacement therapy (HRT) with estrogen (and progesterone if a woman has not had a hysterectomy) have come under considerable scrutiny lately, the importance of estrogen on the skeleton is well known. After 7 years of menopause, up to 50% of a woman's bone strength may be lost! HRT prevents the loss of bone, which occurs after menopause. Unfortunately, HRT has not been shown to be effective in treating established osteoporosis.

Raloxifene (Evista) is known as a "designer estrogen," incorporating many of the good and less of the detrimental effects of estrogen. It is effective in the prevention and treatment of osteoporosis of the spine. It may prevent certain types of breast cancer in those women who may be at high risk. Unfortunately, raloxifene may increase hot flashes and worsen vaginal dryness.

Calcitonin (Miacalcin) is another type of hormone therapy that is taken by nasal spray daily. This treatment is convenient, but unfortunately is not as effective as other therapies.

Alendronate (Fosamax) and residronate (Actonel) are potent medications for the prevention and treatment of osteoporosis. These therapies are effective for prevention and treatment of osteoporosis of the hip and spine, for osteoporosis related to chronic steroid therapy, and for osteoporosis occurring in men. These medications are effective when taken only once weekly, and are able to build bone to a greater extent than hormone based therapies. It is important to take these medications according to instructions: take on an empty stomach with water only and remain upright for 30 minutes.

Forteo is a synthetic form of parathyroid hormone taken by daily injection for 18 months. This therapy impressively increases bone mass and presumably prevents fracture. Unfortunately, the cost is approximately \$20 per day. It is reserved for patients who continue to fracture despite the above treatments, and for those at high risk for future fracture.

What is the first step to determine if I need a DEXA scan or therapy to prevent or treat osteoporosis?

First of all, be sure your intake of calcium and vitamin D is appropriate. Walk daily. Speak with your physician about your risk of developing osteoporosis, and arrange to have a DEXA scan if appropriate.

Consultation regarding appropriate therapy is available by calling your primary care physician or Dr. Joseph Isaacson, rheumatologist at 278-3620.