

## Feature Article:

### Osteoporosis- Avoidable or Inevitable??

By

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Osteoporosis affects 25 million people in the United States and causes 1.5 million fractures annually. Of all hip and spine fractures in white American women aged 65 to 84, 90% occurred as a result of osteoporosis. Osteoporosis has been defined as not only low bone density but also deterioration of the bone micro architecture leading to bone fragility and susceptibility to fractures.

Why is osteoporosis such a common occurrence? There are numerous factors. The loss of female hormones, especially estrogen and progesterone, as a result of menopause used to be the number one culprit. Since the year 2000, bioidential hormone replacement has helped women to maintain not only healthy bones, but also skin, energy, and libido. Now, the potential for osteoporosis to continue its destructive ways is largely in part to our poor diet, high stress lifestyles, and over-use of damaging prescribed medications, well known to pull minerals out of the bone. Natural treatment approaches to prevent and minimize the risk of developing a severe form of osteoporosis, when used consistently, can slow bone loss, improve bone density, bone strength, and bone architecture.

The gold standard for the diagnosis of Osteopenia or Osteoporosis is the DEXA scan (Dual energy X-ray absorptiometry). It is more accurate than other techniques, delivers a lower dose of radiation, and has a shorter examination time. Currently, the standard of care is not to order a DEXA scan until you are over 65 years of age unless you have one of the following risk factors; 1) a fracture after menopause, or a hip fracture in either parent, 2) weigh less than 127 lbs or a BMI less than 21, or 3) are a current smoker. A diagnosis of osteopenia will be given if the bone mineral density (BMD) falls between 1 and 2.5 standard deviations from the mean. Osteoporosis on the other hand is a BMD greater than 2.5 SD below the mean. If you have recently learned of your DEXA scan results or are anxious about having the test administered, a consultation with your physician will help to clear up any questions or concerns.

Usually osteoporosis is thought of as a disease of retirement age. However, research has pointed to a new generation of young adults with significant loss of bone. In a healthy growing adult, peak bone density is reached between 30-35 years of age. However, the American lifestyle has moved away from many of the factors that help to optimize bone growth. Now, younger adults are being diagnosed with osteopenia and osteoporosis at earlier ages than ever before. Lifestyle choices leading to increased risk tend to include one or more of the following:

1) **Diet.** Females who chronically consume insufficient calories on a daily basis such as in anorexia nervosa or bulimia have been shown to become osteoporotic much earlier on phosphorus and approx 7 teaspoons of sugar per serving, both of which have a negative impact on calcium levels. In a study of 228 children, of the 57 who had low blood calcium levels, 67% of them consumed more than 4 cans of soft drinks per week. Only 28 percent of those children with normal blood calcium levels consumed the equivalent amount of soda per week.

**Refined grains and flours** may also play a part in the development of osteoporosis due to the removal of the nutrient rich portion of the grain. The refining process removes trace minerals such as manganese, copper, and zinc as well as vitamin B6, calcium, and magnesium, all of which play a role in bone development and maintenance.

A **high animal protein diet** has also been linked to bone loss. Metabolically, calcium is released from the bone to buffer the acidic breakdown products of animal protein and is therefore excreted in the urine. The amino acid methionine which has the highest concentration in animal meats, dairy products, and eggs is converted to homocysteine. High homocysteine levels may cause bone loss as well as increase your risk of stroke, heart attack, and dementia.

2) **Malabsorption syndromes**, such as IBS, Celiac, Crohn's disease.

3) **Smoking:** Smokers lose bone more rapidly than nonsmokers and reach menopause two years earlier than nonsmokers.

4) **Alcohol consumption:** consuming two alcoholic beverages per day significantly increases the risk of bone fractures. The good news is that a small amount of alcohol consumption i.e., **one to two ounces per week**, is associated with a higher bone mineral density in women over 65 years of age, and a decreased risk of hip fracture.

5) **Insufficient exercise:** Bones need to be stressed by weight in order to increase bone mass therefore jumping in the backyard pool for exercise or walking to the mailbox and back will do nothing to increase bone density. Weight bearing exercises such as jogging, running, gymnastics, basketball, and weight lifting will increase bone density if done consistently. Recker and associates demonstrated the more college age women exercised, the greater BMD they achieved. Reportedly to achieve these benefits weight training as little as two times a week coupled with a healthy diet could increase and maintain BMD throughout their life.

6) **Hereditary:** In 1989, the New England Journal of Medicine published a research study by Seeman et al, revealing reduced bone mass for their age in daughters of women with osteoporosis. It concluded that 80-90% of women with a family history of osteoporosis

and especially hip fractures are at the highest risk of developing the condition. Their risk can be minimized by optimizing their calcium and other crucial minerals stores.

Women can help reduce their risk and incidence of acquiring a diagnosis of osteoporosis by making a few changes in the choices made a daily basis. Remember that osteopenia and osteoporosis are very treatable if caught early.

## **TRADITIONAL TREATMENT APPROACHES**

### **1) Calcitonin**

Has not been shown to reduce the risk of hip or wrist fractures. May reduce the risk of spine fractures in women with osteoporosis.

### **2) Raloxifene**

Reported in JAMA in 1999 to reduce the risk of spinal fractures in women with osteoporosis but has not been demonstrated to reduce the risk of hip or wrist fractures. Also carries the unfortunate side effects of hot flashes, leg cramps, and possibly the formation of blood clots most commonly found in the lower leg.

### **3) Bisphosphonates**

Has been studied the most extensively to show a reduced risk of spine and hip fractures in women with osteoporosis. However, in order to take this drug, you must do so on an empty stomach, stay sitting up right for a minimum of 30 minutes, and do not eat for 30 minutes after taking the pill. It also is advised to take your calcium and Vitamin D supplement at a different time of day. The unpleasant side effects include bone and muscle pain, and throat, stomach, and/or intestinal irritation.

### **3) NEWEST DRUGS**

Some of which are injected instead of taken in pill form, such as Forteo, uses recombinant human parathyroid hormone rDNA technology. The parathyroid gland is the main regulator of calcium and phosphate metabolism in the bone and kidney. However, the long term effectiveness in humans is yet to be determined. In rats, receiving a high dose, osteosarcoma, (bone cancer) occurred. The drug is not indicated for those patients that have received external beam radiation of the bone, history of bone cancer, or hypercalcemia (high levels of calcium in the blood).

## **NATUROPATHIC TREATMENT**

- 1) Weight bearing exercise** 2-3x/week at a minimum.
- 2) Vegetarian diet** is associated with a lower risk of osteoporosis, according to a study published by Ellis et al in 1972 in The American Journal of Clinical Nutrition. By not eating animal protein, and instead an increased amount of fresh fruits and vegetables, soy, nuts, and seeds, the probability of calcium going to the bone and staying in the bone is much greater.
- 3) Soybeans:** Soy appears to have a pro-estrogen effect on bone according to a University of Illinois study. Menopausal women had an increase in mineral levels and lumbar spine bone density after taking 55 to 90 mg of isoflavones for six

months! A soy protein diet seems to have more of an effect on trabecular bone (spine) than on cortical bone (hip).

- 4) **Calcium:** Soy is also a good source of calcium. Other foods high in calcium include kelp, collard, turnip, and dandelion greens, parsley, broccoli, spinach, molasses, almonds, Brazil nuts, walnuts, Swiss, cheddar, and cottage cheese.

#### **SUPPLEMENTATION:**

- 1) **Calcium**, 1,000mg/day in women aged 31 -50, and 1,200-1,500 mg/day in women 51 and over are recommended EXCEPT if you have a history of kidney stones. Calcium citrate is one of the best forms as it is less likely to cause constipation, can be taken on an empty or full stomach, and does not contain high levels of lead found in bone meal, unrefined calcium carbonate, and dolomite. Calcium carbonate is unique in that it needs to be chemically altered by stomach acid in order to be absorbed. This maybe a problem in people with insufficient stomach acid, especially the elderly and Type A blood types.
- 2) **Vitamin D**, 1,000 mg/day for 25-50 years of age, 1,200-1,500 for 51 years and older. Vitamin D is really a hormone synthesized in the skin with the help of sunlight. Most of us have been forewarned of sun exposure and the risk of cancer as a result, many of us are vitamin D deficient. This is detrimental to our health as vitamin D helps with the absorption of calcium, phosphate absorption in the intestines, and calcium reabsorption in the kidneys. Vitamin D also helps to maintain normal parathyroid function, is an important immune system modulator, and is important for muscle strength.
- 3) **Magnesium** 500-800 mg/day. In a two year study by Stendeg et al, of osteoporotic menopausal women, magnesium supplementation resulted in a significant increase in bone mass density and a decrease fracture incidence.
- 4) **Manganese** 15-30 mg per day. Considered one of the most important trace nutrients in the treatment of osteoporosis. Manganese stimulates the production of mucopolysaccharides that provides a structure on which calcification can take place in the bone.
- 5) **Boron** 3 mg/day. In a study published in 1988 by Dr. Nielson, results indicated boron supplementation reduced the urinary excretion of calcium by 44 percent, reduced urinary magnesium excretion, and increased serum concentrations of 17 beta estradiol and testosterone, thereby preventing bone loss.
- 6) **Zinc** 15-20 mg/day. Is essential for normal bone formation, has the bio-chemical ability to enhance the effectiveness of vitamin D. Low levels found in the elderly and people already diagnosed with osteoporosis.
- 7) **Copper**, 1.5 – 3 mg/day. A deficiency in this trace mineral has been linked to abnormal bone formation. Maybe one of the causative factors of osteoporosis.
- 8) **Folic Acid**, 400 – 800 mcg per day. Linked to high homocysteine levels which results in increased bone loss in menopausal women and twice the risk of osteoporotic fractures of the hip and wrist in women.
- 9) **Vitamin B6**, 50-100 mg/day has been shown to reduce homocysteine levels. Vitamin B6 deficiencies have been linked to increased fracture healing time,

impaired growth of cartilage, defective bone formation, and therefore more rapid development of osteoporosis.

- 10) Vitamin C**, 1000 mg/day. Promotes formation and cross linking of some of the structural proteins in bone.
- 11) Vitamin K** 45 mg per day. A required vitamin for the production of osteocalcin which is a protein matrix on which mineralization occurs. Osteocalcin has been shown to attract calcium to bone tissue.
- 12) EFA's** 1 gm/day of EPA and DHA. They are called Essential Fatty Acids for a reason, known to work as an anti-inflammatory, especially to joints.

## **BOTANICAL MEDICINE**

### **1) Trifolium pretense (Red Clover)**

In a study of 50 postmenopausal women given Red Clover daily, bone mass density (BMD) increased by 4% and as an added benefit a 21% increase in HDL.

### **2) Urtica dioica (Stinging Nettles)**

Is a plant rich in calcium, magnesium, and silicic acid, a form of silicon the body can readily use.

### **3) Cimicifuga racemosa (Black Cohosh)**

Study published in *Menopause*, 2006 suggested a correlation between Black Cohosh and the stimulation of bone building cells.

### **4) Matricaria recutita (Chamomile)**

Contains alpha bisabolol and chamazulene which are anti-inflammatory in nature via inhibition of arachadonic acid metabolism.

### **5) Equisetum arvense (Horsetail)**

Known to increase connective tissue tone and resistance, act as a diuretic without altering the electrolyte balance, and helps heal tissue. Horsetail is one of the richest plant sources of silicon, and contains other crucial trace minerals such as, potassium, manganese, and flavonoids.

### **6) Taraxacum officinalis (Dandelion greens)**

Best known as a liver and gall bladder detoxifier, dandelion contains approx 1 mg of boron and 200 mg of calcium in just 10 gms of dried dandelion shoots. It also contains sterols which have an anti-inflammatory effect on the body and will play a role in hormone balancing.

If you're feeling overwhelmed by the thought of taking all these pills on a daily basis, don't be. There are several highly reputable companies that have taken the available data and combined the above list into 1-2 different products. So instead of taking 12

different supplements you may obtain nearly all the above list in one product which is often prescribed as 2 pills, taken 2-3 x/day. These products are available only through a licensed naturopathic physician. We also carry these products in our own medicinalary. So stop by to begin caring for the bones that carry you everywhere every day. The effort put forth now will reward you with great strength and mobility for many, many years to come.

If you need help designing a treatment plan specific to you, call the office at (808) 498-4018 to make an appointment with Dr. Ardolf.