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Osteopenia

Vitamin D and Calcium

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The origin of osteopenia dates back to 1992, when a group of W.H.O. experts coined the term, "osteopenia" and defined it as a condition with reduced bone density, measured between 1.0 and 2.5 standard deviations below normal of an average 30-year old white woman. This same group of experts had also defined osteoporosis as a disease with bone density measurements greater than 2.5 standard deviations below that same normal. Experts at the Mayo Clinic commenting about the definition of osteopenia stated; "It was just meant to indicate the emergence of a problem," and that "It didn't have any particular diagnostic or therapeutic significance. It was just meant to show a huge group who looked like they might be at risk." Needless to say, this definition of osteopenia has since been very controversial. Dr. Cummings, of the University of California, San Francisco stated, "There is no basis, no biological, social, economic or treatment basis, no basis whatsoever for using one standard deviation." Bones naturally become thinner as people grow older. Some people who have osteopenia may not have bone loss. They may just naturally have a lower bone density." Other experts also state "Expanding the disease to include a new condition, osteopenia, or pre-osteoporosis, with boundaries so broad they include more than half of all women over fifty."

Subsequently, scanning equipment used for testing bone density have largely been developed and promoted by major drug companies who produce alendronate drugs. In fact, there are now approximately eight to ten-thousand bone-measuring devices throughout the US compared to only about eight-hundred in 1995. Some drug companies promote their use by making them available for relatively little cost and often reimbursing doctors for the scans themselves. Eventually insurance companies began reimbursing for bone scans as well,

along with the expensive prescription bone drugs. Over time, bone density studies are now being performed in a multitude of ways by a variety of testing equipment, producing wide variations in test results. For example, it has been found that the small portable devices that measure bone density at the wrist are not as reliable as other methods. Experts at an FDA hearing agreed that a better way than T-scores was needed to assess a person's risk for fracture and that many women are being prescribed drugs they do not need. As a result, many physicians, scientists and experts in the field of osteoporosis are pushing to scale back bone testing.

Should Osteopenia be Treated?

Osteopenia simply implies that a person has reduced bone density as they age. However, osteopenia should not be confused with osteoporosis. Osteopenia may never progress to osteoporosis and in fact may be normal for most people. Further, others have argued that the term osteopenia could be and has been used to incorrectly label individuals as having a disease, thereby making it easier to treat them with new drugs that they may not need. As a result, millions of women may be exposed to bone drugs at a large expense, with little or no evidence that the drugs are safe or even effective. This is also true with the recommendations for higher calcium and vitamin D intake. Certainly a bone density test is a good idea and can be used as a baseline for future tests. However, proper interpretation of the test result is critically important as well as the importance of using the same equipment for any follow-up tests. Also, it should be noted that a normal bone density test does not rule out the possibility that a person may suffer fractures.

If I Have Osteopenia Should I Take Extra Vitamin D and Calcium?

This would seem feasible on the surface. Due to the ever-prevailing increase in the incidence of osteoporosis and resulting fractures, the logical assumption has been to recommend increased intake of calcium and vitamin D. However, this has not quelled the tide of individuals developing osteoporosis as there has been a steady rise in incidence. It seems that few have the courage to speak against the unsupported logic of the mainstream view of simply raising the recommended daily intake of calcium and vitamin D. A report by Ganske, et al in fact discusses the role of too much vitamin D in the elderly, despite vitamin D being the most commonly recommended vitamin in that age group. High vitamin D intake in animal studies show that the vitamin alters mineral ion metabolism and promotes signs of premature aging, arteriosclerosis, emphysema, osteoporosis, soft tissue calcification and generalized atrophy of the organs. Ablation of the vitamin D pathway reversed these developments and prolonged survival. They cite how uncontrolled vitamin D intake could cause occult vitamin D intoxication and could produce skeletal changes that one would actually expect to find in vitamin D deficiency. Hypervitaminosis D causes hypercalcuria and loss of bone mineral density. This emphasizes once again that the use of vitamin D without clear objectives is an unrealistic approach and can lead to unexpected complications.

Vitamin D requirements vary from individual to individual and should not be broadly recommended based upon health conditions. Measuring vitamin D levels alone or even evaluating vitamin D intake does not insure adequacy or recognize excesses. Vitamin D should be assessed in conjunction with other minerals, vitamins, nutrients, health condition, medication use and metabolic characteristics if it is to be used effectively for any individual.

Fractures Not Prevented By Calcium and Vitamin D Supplements

A randomized study of over 3,000 women aged 70 years and over with one or more risk factors for hip fracture was carried out over a 24-month period. One group received daily supplementation of 1000 milligrams of calcium and 800 IU of vitamin D per day. At the end of the study there was no significant differences found in the fracture occurrences. Prospective cohort studies suggest that calcium intake is not significantly associated with decreasing the risk of hip fracture in men or women. Controlled studies have shown no reduction in hip fracture risk with calcium supplementation and in fact may even increase risk. The authors summarized their report stating, "future studies of the prevention of hip fracture or any nonvertebral fracture in women should not consider calcium supplementation alone, but rather, should focus on the optimal combination of calcium plus vitamin D and possibly also the correction of phosphate deficiency by using calcium-phosphate supplements.

These studies support our past findings here at Trace Elements and subsequent recommendations for the assessment and treatment of osteoporosis. Hair Tissue Mineral Analysis (HTMA) studies have long ago revealed that osteoporosis or increased fracture risk is not associated with calcium deficiency alone. There are over thirty factors associated with proper bone integrity which need to be considered when forming an appropriate prevention and therapeutic regimen for individuals with hip fractures or that are at increased risk of fractures. For example, magnesium supplementation has been shown to be effective for increasing bone density in postmenopausal women. These studies have shown better results in restoring bone mineralization than with the use of calcium. One study involved a group of osteoporotic women given magnesium supplements for two years, which resulted in the prevention of fractures and significant increase in bone density. It should be noted that magnesium is involved in, and regulates the transport of calcium. It is imperative to correct this disturbance between calcium and magnesium in order to provide normal calcium transport into bones.

HTMA testing of individuals with osteoporosis finds that approximately 75 percent fall into the Parasympathetic or Slow Metabolic category. This metabolic pattern is not associated with an increased need for calcium or vitamin D, but is associated with a metabolic defect that includes multiple factors that contribute to osteoporosis. On the other hand, approximately 25 percent of patients with a risk of osteoporotic fractures would actually respond favorably to calcium and vitamin D supplements, as well as calcium cofactors. These are individuals who are found to be Sympathetic dominant, or Fast Metabolic types. Again, we say, treatment of osteoporosis as well as any other health condition should be based upon individual assessments and targeted nutritional therapy rather than being based upon symptoms alone and a generic shotgun approach.

Calcium and Vascular Events in Older Women

A randomized placebo controlled study was performed to determine the effect of calcium supplementation on the incidence of stroke, myocardial infarct (MI) and sudden death in healthy postmenopausal women. This New Zealand study included over seven-hundred women in the control group and approximately the same amount in the treatment group. The study reported more MI's in the calcium group than in controls. Other measurements include stroke and sudden death, which were also reported higher in the calcium supplemented group. The study concluded "Calcium supplementation in healthy postmenopausal women is associated with upward trends in cardiovascular event rates. This potential detrimental effect should be balanced against the likely benefits of calcium on bone." The negative impact of calcium supplementation can certainly be explained based upon HTMA studies. Since many women have a parasympathetic mineral dominance, excess calcium intake in the face of other mineral deficits

could contribute to increased calcium deposition into soft tissues, including arteries, and enhance blood clotting. When a magnesium deficiency is already present along with high calcium supplementation and increased vitamin D intake, this can be considered as “adding fuel to the fire” for the enhanced deposition of calcium into soft tissues. This is illustrated by the following case study. The New England Journal of Medicine reported the case of a fifty year old woman who had a history of chronic pain with intermittent acute episodes. Laboratory tests revealed her serum magnesium level to be 0.9 milligram per deciliter, well below the normal range of 1.6 to 2.5. Her urinary magnesium excretion was also elevated. Radiographs showed chondrocalcinosis of the knee and wrist joints. Chronic magnesium deficiency is associated with osteoarthritis due to calcium deposition within the joints and can be treated with magnesium supplementation.

Protein and Bone Health

A cross-sectional and longitudinal study of over 1000 women with an average age of 75 was conducted to determine the effects of protein intake on bone health. Results found that bone mineral density (BMD) was less in those consuming a lower protein diet (<66 grams/day) compared to those consuming more protein (>87 grams/day). Protein enhances BMD due to its action of increasing the concentration of insulin-like growth factor (IGF). The adult dietary requirement for protein is considered to be 0.8 grams per kilogram. However, based upon these findings this recommendation may need to be adjusted upward to greater than 0.84 grams per kilogram body weight for maintaining bone mass in older women.

It has been emphasized by many in the past that high protein diets actually contribute to osteoporosis. However, as stated by Kerstetter, et al, “ there are no definitive nutrition intervention studies that show a detrimental effect of a high protein diet on the skeleton and the hypothesis remains unproven.” Several epidemiological studies have demonstrated reduced bone density with increased rates of bone loss in individuals consuming habitually low protein diets. At Trace Elements, we find that the majority of individuals who develop osteoporosis are actually lacking in protein. As we have been saying for over 20 years, protein is a vital and important component of the bone matrix and is often an overlooked factor in bone health.

Assessment of Bone Health and HTMA Studies

Assessments of bone health of individuals with HTMA tests not only include the determination of tissue calcium levels, but several other elements, their interrelationships, and their relationship to vitamins as well as individual metabolic characteristics. Much more can be added to this list such as age, gender, physical activity, illness, medications, lifestyle and dietary habits. From a mineral perspective, HTMA calcium levels show whether a person is simply low, normal or has high tissue calcium. However, calcium has to be evaluated in conjunction

with a person’s metabolic type and the relationships between calcium and other minerals as normal tissue calcium does not insure that calcium is not being lost from the bones. Calcium should be evaluated in relationships to phosphorus, magnesium, sodium and potassium. Other minerals responsible for normal bone integrity include zinc, copper, and manganese. From an endocrine standpoint the levels and relationships between sodium and potassium are important to determine adrenal and thyroid expression. Calcium and magnesium can reflect insulin and parathyroid activity and zinc and copper may reflect the estrogen and progesterone relationship. The overall mineral pattern can also be related to the immune response. An excessive cellular or humoral auto-immune response can be an underlying factor triggering bone loss. Of course each mineral has a vitamin partner or co-factor that may also be assessed based upon the mineral interrelationships.

In conclusion, it should be emphasized that osteopenia is not a diagnosis but rather, it simply implies a normal reduction in bone density associated with aging. Osteoporosis on the other hand, is a loss of bone mass and requires treatment. Therapy for osteoporosis however, should not be based upon simply recommending extra vitamin D and calcium since osteoporosis is actually a metabolic condition with over thirty different factors that could contribute to the condition. Therapy should be based upon individual evaluation with a targeted approach to therapy. For further information you can access the following link:

<http://www.traceelements.com/Docs/News%20SeptDec%2086.pdf>

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