

Women's Health Lecture Series

Part 1: Osteoporosis

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I. Introduction of Naturopathic Medicine

- 1) Philosophy of Naturopathic Medicine
- 2) Education and Training
- 3) Six Guiding Principles of Naturopathic Medicine
- 4) Egg of Health©

II. Bone Mass Facts

- 1) Peak Bone Mass at age 35
 - a. importance of early habits
- 2) Pre-menopause bone loss = 0.5-1% per year
Menopause bone loss = 2-4% per year for 1st 5yrs then slows

III. Brief overview bone tissue

- 1) Bone building and bone breakdown
 - a. osteoblasts and osteoclasts

IV. Risk Factors

- 1) Nutritional deficiencies
- 2) Sedentary lifestyle
- 3) Excess insulin
- 4) Excess alcohol consumption: interferes with osteoclast/blast behavior
- 5) Low calcium intake
 - a. Digestive disorders that reduce Ca⁺⁺ absorption
 - i) IBS
 - ii) Celiac
 - iii) Low HCl
- 6) Depression: increases IL-6 which stimulates osteoclasts and increases cortisol.
- 7) High caffeine
 - a. > 2 cups of coffee per day ↑ urinary Ca⁺⁺ excretion
- 8) Low sunlight exposure
 - a. reduced vit. D
- 9) Thyroid hormone therapy
 - a. increase osteoclast activity
- 10) History of amenorrhea
- 11) History of Anorexia nervosa
- 12) Aluminum containing antacids
 - a. aluminum get incorporated into bone and causes weak bone structure
- 13) Smoking
- 14) Family History
- 15) Steroid therapy
- 16) Long term stress
- 17) Thin and tall build

V. Screening for Osteoporosis

- 1) DEXA- measures BMD at lumbar spine and hip. Best predictor for fractures.
 - a. T-score
 - i) more significant measurement comparing subjects BMD to normal young adults of same sex
 - b. Z-score
 - i) comparison of subjects BMD to other individuals of same age and sex
- 2) Adrenal Stress Index (ASI)
 - a. important measurement of cortisol/DHEA levels.
 - b. some insight into growth hormone production
 - i. IGF-I released by the liver in response to growth hormone stimulates osteoblast activity
- 3) Other Tests to Consider
 - a. Deoxypyridinoline (DPD)
 - i) specific urinary by-product can indicate level of bone breakdown
 - ii) useful tool for monitoring treatment effectiveness
 - a. gastrointestinal and digestive function tests

VI. Treatment

- 1) Estrogen
 - a. administered as CEE (conjugated equine estrogen) or bio-identical hormones
- 2) Adrenal Support
 - a. sex hormone precursors produced by the adrenal glands, primarily DHEA
 - b. if adrenal function compromised, elevated cortisol and reduce DHEA push bone resorption
- 3) DHEA supplementation
 - a. precursor of estrogen and testosterone
 - b. stimulates bone deposition and re-modeling
 - c. decrease LDL cholesterol
 - d. increase muscle mass and immune function
 - e. should not be administered without checking levels first. It is a hormone!
- 4) Fosamax (Alendronate)
 - a. inhibits osteoclast activity
 - b. clinically proven to reduce risk of fracture at hip, spine and wrist by as much as 50%
 - c. also clinically proven to have esophageal and gastric mucosal toxicity, especially when used with NSAID drugs
 - i) negative side effect reduced if given in weekly vs. daily dose
 - d. some speculation about long term effects and the production of a weaker bone structure.

- 5) Calcium
 - a. 500-1000mg supplement is sufficient
 - b. effect lost after 1yr of discontinuing
 - c. citrate is best absorbed form / worst is carbonate
- 6) Dairy products
 - a. milk is the highest source of naturally occurring trans-fatty acids.
 - b. also high in phosphorus which can deplete bone calcium stores
- 7) Magnesium
 - a. 600-800 mg daily
 - b. 50% of mg in body is in bones
 - c. 1 yr or trt increased bone density
 - d. shown to prevent fractures
- 8) Vitamin D
 - a. 200-1200 IU daily or sunlight
 - b. enhances Ca⁺⁺ absorption
 - c. decreases fractures, and increases hip density
 - d. sunlight exposure superior to supplement
 - i) women in northern latitude lose 3-4% of bone mass every winter
- 9) Vitamin C
 - a. 1-3grams daily
 - b. supports collagen formation
- 10) Boron
 - a. 4-12 mg daily
 - b. decreases calcium and magnesium excretion
- 11) Zinc
 - a. 15mg daily
 - b. enhances action of vit. D
 - c. supports normal osteoblast/clast formation
- 12) Manganese
 - a. 2-5mg daily
- 13) Copper
 - a. 2-3mg daily
- 14) Vitamin B6
 - a. 50-100mg daily
 - b. decrease homocystine levels
 - i) increased homocystine levels promote osteoporosis and heart disease
- 15) Folate
 - a. 400-800mcg daily
 - i) helps to decrease homocystine levels

16) Essential Fatty Acids (EFA's)

- a. decrease levels of IL-1 and TNF α
 - i) IL-1 and TNF α are powerful stimulators of bone resorption and inhibitors of bone formation
- b. GLA and EPA
 - i) increase calcium absorption
 - ii) increase bone calcium
 - iii) increase bone density

17) Phytoestrogens

- a. alfalfa
- b. soy
 - i) isoflavones (60-90mg/day) protect from bone loss

18) Other options

- a. hip protectors
- b. connective tissue support
 - i) glucosamine
 - ii) chondroitin
 - iii) glutamine

VII. Food choices and Diet

- a. refined carbohydrates and simple sugars
 - a. increase cortisol
 - b. excess insulin response
- b. foods high in nutritional values

VIII. Exercise

- a. weight bearing exercise
 - i) muscle tension pulls on tendons which pull on bones and stimulate bone remodeling and formation
- b. the most effective way to build and maintain bone density

IX. Vitamin A issue

a. Nurses' Health Study indicated that women with highest quintile (7000IU or more) of retinol intake (preformed vit. A from food and supplements, excluding beta-carotene) had an 89% higher risk of hip fracture compared to women in the lowest quintile (2000IU or less).

b. Highest sources of dietary Vit A from milk, fortified breakfast cereal and margarine.

Sugar- urinary Ca⁺⁺ loss and bone loss

Trans fatty acids- decrease EFA = inflammation and decreased bone formation

Milk and phosphorous and Milk and trans fatty acids (data compiled showed drinking 2 glasses of milk a day can increase fracture risk.