



American Medical Women's Association
The Vision and Voice of Women in Medicine since 1915

American Medical Women's Association Position Paper on Osteoporosis

- I. AMWA recognizes that osteoporosis is a serious condition that can have devastating health, financial and quality of life consequences for patients and their families.
- II. AMWA recognizes that osteoporosis should not be viewed as a normal consequence of aging, but rather as a dynamic process that can be prevented, interrupted, and treated by various measures.
- III. AMWA asserts that there is inadequate understanding of the risks and implications of osteoporosis among both the public and health care professionals that must be improved.
- IV. AMWA supports and promulgates professional and public education that emphasizes:
 - Acquisition of peak bone mass during childhood and adolescence through appropriate diet and exercise;
 - Prevention and risk factor modification;
 - Awareness of the risk of osteoporosis among patients with other health conditions;
 - Appropriate use of indicated tests and procedures to detect and follow patients with osteoporosis;
 - Knowledgeable use of current treatment modalities to obtain the best therapeutic results.

Founded in 1915 as the oldest and largest national medical association of women physicians, residents and medical students, the American Medical Women's Association (AMWA) today represents a community of professionals working to promote health and encourage the professional and personal development of those in medicine, healthcare and health-related fields. AMWA is dedicated to the promotion of ethical principles of medical practice, particularly as they apply to health care issues involving women and their families. Osteoporosis is a condition that can occur in both men and women, but disproportionately affects women as they age.

Definition and Background

Osteoporosis is a metabolic bone disorder in which the absolute bone mass in the human body decreases and the bones become so weakened that minimal trauma may cause fractures. There are many causes and precipitating factors for this condition, but postmenopausal women have the highest incidence of this disease. The female hormone, estrogen, is a major factor in the prevention of bone loss and maintenance of bone strength in women. At menopause, when the ovaries cease to secrete estrogen, there is an increased rate of bone resorption, leading to an increased risk of fractures, especially those occurring with minimal trauma (fragility fractures). Unfortunately, osteoporosis is not symptomatic, and is frequently not diagnosed until a fracture occurs.

Impact

The impact of osteoporosis on the health of Americans, particularly women, is enormous. Close to 44 million people in the United States have osteoporosis or low bone mass, placing them at increased risk for fracture and disability. (1) The condition leads to approximately 1.5 million fractures yearly in the United States, with most occurring at the spine, hip, and wrist. These fractures result in an estimated cost of 12 to 19 billion dollars each year. (2) Following osteoporotic hip fracture, there is an excess mortality of 18-33% within the first year. In addition, 25-75% of patients who sustain a hip fracture do not regain their pre-fracture level of function. (3) Hip fractures account for a significant proportion of admissions to nursing homes for women.

Patients who sustain vertebral fractures also have increased morbidity and mortality. Osteoporosis and related fragility fractures are among the most common debilitating disorders that contribute to the loss of functional independence and quality of life in older women. In addition, patients with fragility fractures are 1.5-9.5 more likely to sustain a second fracture, usually in the first year. (4) Bone loss may also be accelerated in patients with such conditions as renal failure, inflammatory bowel disease, inflammatory arthropathies, and hepatic disease. In addition, chronic daily use of oral corticosteroids also results in decreased bone mass. (5)

Current Understanding

In recent years scientific understanding of osteoporosis has increased greatly. Osteoporosis is no longer considered the inevitable consequence of aging, but rather a dynamic process that can be prevented, interrupted, and treated by various measures. Investigations on bone development have shown that peak bone mass is acquired during the first three decades of life and then declines at a steady rate thereafter, accelerating markedly in women at menopause. (6)

Risk factors for those more likely to develop osteoporosis have been identified. Key risk factors are personal history of fracture as an adult, fracture in a first degree relative, current cigarette smoking, excessive alcohol intake, low body weight, and sedentary lifestyle. (7)

Prevention

Therapy to prevent and treat osteoporosis is evolving. Adequate calcium, vitamin D, and weight-bearing exercise are necessary throughout life to acquire and maintain peak bone mass, as is the need to avoid smoking, and drinking alcohol to excess. The role of calcium nutrition for prevention has been well elucidated in the medical literature. This includes adequate calcium in childhood and adolescence to achieve peak bone mass and in adults to prevent hyperparathyroidism and related bone loss. (8) Adequate vitamin D intake throughout life is necessary to absorb calcium. Calcium and vitamin D intake are critical to the prevention and treatment of osteoporosis. (9)

Several studies have shown that a significant proportion of women who sustain a fragility fracture are vitamin D deficient. (10-12) Additionally, a recent review of several studies reports that up to 76% of postmenopausal women being treated for osteoporosis are vitamin D deficient. (13) These findings indicate an underemphasis of the role of vitamin D in both prevention and treatment. An Expert Panel on Vitamin D and Bone Health convened by AMWA in 2005 concluded that recent research indicates that the current Institute of Medicine (IOM) recommendations for vitamin D intake are inadequate and called for an increase in current vitamin D intake recommendations to 800-1,000 IU per day for women and men over age 50. The panel also recommended individualized treatment for optimal bone health, as some patients with lower vitamin D levels may require additional supplementation. (14)

Identification/Diagnosis

Dual energy X-ray absorptiometry (DEXA) detects osteoporosis long before the obvious physical deformities or diagnostic features on plain X-rays have occurred. National Osteoporosis Foundation Guidelines recommend DEXA of the hip and spine to screen for osteoporosis based on factors such as age and risk factors. DEXA screening should be performed in women over the age of 65, in younger post-menopausal women with at least one risk factor (other than being female, Caucasian, and post-menopausal), and in post-menopausal women who present with a fragility fracture. (15)

Treatment

In addition to calcium and vitamin D, current treatment options for established osteoporosis include bisphosphonates, serum estrogen receptor modulators (SERMs), and teriparatide. All three of these have demonstrated antifracture efficacy in randomized controlled trials, though these therapies are not without risk. Bisphosphonates are indicated for the prevention and treatment of post-menopausal and glucocorticoid-induced osteoporosis. (16) Selective estrogen receptor modulators increase bone density in post-menopausal women. This class of drug, however, has only demonstrated efficacy in preventing vertebral fractures; efficacy for non-vertebral fractures has not been demonstrated. (17) Teriparatide is indicated for use in high risk patients, including those with previous fragility fractures, those with multiple risk factors, or those who are intolerant of or whose condition has failed other medications. (18)

Treatment risk

Recent reports have described a population of patients who present with areas of osteonecrosis of the mandible and maxilla after treatment with bisphosphonates. These areas most frequently develop after dental procedures but may occur spontaneously. (19) This entity has been described in series of case reports, so its true incidence is unknown. It is currently estimated at about 1 case in 10,000 patients. (20) The etiology of this condition is not known but may be related to the inhibition of angiogenesis, 21 and alteration of endothelial cell function by bisphosphonates. (22)

The patients who present with this condition have typically received intravenous, nitrogen-side chain bisphosphonates for the treatment of metastatic solid tumors or for the prevention of lytic lesions associated with multiple myeloma. Fewer cases of osteonecrosis of the jaw have been reported in patients taking bisphosphonates for the treatment of osteoporosis or Paget's disease. (21) However, this entity should be considered when prescribing bisphosphonates for these conditions. Patients may want to consult with their dentists before starting treatment with bisphosphonates, especially if they have a higher risk of developing this condition due to a pre-existing dental disease or poor-fitting dentures.

Other medications, such as glucocorticoids, or conditions, such as diabetes or renal disease, may also put patients at higher risk of developing osteonecrosis associated with the use of bisphosphonates. (23) If possible, patients on bisphosphonates should discuss non-surgical methods of addressing dental disease that develops. Stopping bisphosphonates after the development of osteonecrosis may not lead to healing of the lesions, due to the long half-life of these medications in bone. (24) Further research is needed concerning this condition, especially addressing its etiology, pathophysiology, risk factors, and optimal methods of treatment. (25)

AMWA's Position

AMWA considers osteoporosis to be a crucial issue healthcare issue. Yet, there is insufficient awareness of this condition, its risks and implications for lifestyle and overall health, among both the public and health care professionals. Physicians need to take advantage of advancing medical information about this disease. Efforts to prevent, detect, and treat osteoporosis can be applied by physicians and other health care providers in a broad range of specialties, including pediatrics, family practice, internal medicine, obstetrics-gynecology, gerontology, radiology, rheumatology, endocrinology, orthopedic surgery and public health. Multidisciplinary attention is important to improve prevention, as well as recognition and treatment of osteoporosis throughout the lifespan.

AMWA supports improved funding for patient care and research on osteoporosis. AMWA works actively with a wide range of organizations to publicize the facts about osteoporosis and develop educational programs for providers and the public. We believe that professional and public education should emphasize:

- Acquisition of peak bone mass during childhood and adolescence, through appropriate diet and exercise;
- Prevention and risk factor modification;
- Awareness of the risk of osteoporosis among patients with other health conditions;
- Appropriate use of indicated tests and procedures to detect and follow patients with osteoporosis;
- Knowledgeable use of current treatment modalities to obtain the best therapeutic results.

Adopted by the House of Delegates, November 1991
Revised 2006, Author: Kimberly J. Templeton, MD

References:

1. Bone Health and Osteoporosis: 2004 Report of the Surgeon General, US Dept. HHS. 2004.

Complete citation: Bone health and osteoporosis: a report of the Surgeon General. - Rockville, Md.: U.S. Dept. of Health and Human Services, Public Health Service, Office of the Surgeon General ; Washington, D.C. : Supt. of Docs., U.S. G.P.O., 2004.

2. Ibid.

3. Tosi, L. Breaking Tradition: A New Look at Fracture. Power point presentation: AMWA Annual Meeting, 2006. Tucson, AZ.

4. Robinson, CM, Royds, M, Abraham, A, McQueen, MM, Court-Brown, CM, Christie, J. Refractures in patients at least forty-five years old. a prospective analysis of twenty-two thousand and sixty patients. J Bone & Joint Surgery (American) 2002; 84:1528-1533.

5. Lane, NE, Lukert, B. The science and therapy of glucocorticoid-induced bone loss. Endocrinology and Metabolism Clinics of North America. 1998; 27:465-483.

6. National Osteoporosis Foundation web posting: www.osteoporosis.org. 2006.

7. Bone Health and Osteoporosis (see 2004 Report of the Surgeon General above)

8. Ibid.

9. Ibid.

10. Nurmi I, Kaukonen JP, Luthje P, Naboulsi H, Tanninen S, Kataja M, Kallio ML, Leppilampi M. Half of the patients with an acute hip fracture suffer from hypovitaminosis D: a prospective study in southeastern Finland. Osteoporos Int. 2005 Dec;16(12):2018-24. Epub 2005 Aug 24.

11. Moniz, C, Dew, T, and Dixon, T. Prevalence of vitamin D inadequacy in osteoporotic hip fracture patients in London. Current Medical Research and Opinion, 2005; 21:1891-1894.

12. SJ Gallacher, SJ, McQuillan, C, Harkness, M, Finlay, F, Gallagher, AP and Dixon, T. Prevalence of vitamin D inadequacy in Scottish adults with non-vertebral fragility fractures. Current Medical Research and Opinion, 2005. 21:1355-61.

13. Gaugris S, Heaney RP, Boonen S, Kurth H, Bentkover JD, Sen SS. Vitamin D inadequacy among postmenopausal women: a systematic review. QJM. 2005 Sep;98(9):667-76. Epub 2005 Jul 8.

14. Expert panel: An In-Depth Discussion of Vitamin D for Men & Women Over 50. American Medical Women's Association. June 9, 2005.

15. National Osteoporosis Foundation, op cit.

16. National Osteoporosis Foundation, op cit.

17. National Osteoporosis Foundation, op cit.

18. National Osteoporosis Foundation, op cit.

19. Sarathy, AP, Bourgeois, SL, Goodell, GG. Bisphosphonate-associated osteonecrosis of the jaws and endodontic treatment: two case reports. J Endodontics. 2005; 31:759-763. Erratum in J Endodontics. 2005 Nov;31(11):835-6.

20. Wooltorton, E. Patients receiving intravenous bisphosphonates should avoid invasive dental procedures. CMAJ. 2005 Jun 21;172(13):1684. Epub 2005 Jun 1.

21. SL Ruggiero, SL, Mehrotra, B, Rosenberg, TJ, Engroff, SL. Osteonecrosis of the jaws associated with the use of bisphosphonates: a review of 63 cases. J Oral & Maxillofacial Surg. 2004; 62:527-534.

22. Merigo, E, Manfredi, M, Meleti, M, Vescovi, P. Jaw bone necrosis without previous dental extractions associated with the use of bisphosphonates (pamidronate and zoledronate): a four-case report. *J Oral Path & Med.* 2006;34:613-7.
23. Katz, H. Endodontic implications of bisphosphonate-associated osteonecrosis of the jaws: a report of three cases. *J Endodontics.* 2005;31:831-834.
24. Ficarra, G, Beninati, F, Rubina, I, Vannucchi, A, Longo, G, Tonelli, P, Pini Prato, G. Osteonecrosis of the jaws in periodontal patients with a history of bisphosphonates treatment. *Journal of Clinical Periodontology,* 32:1123-1128, 2005.
25. Farrugia, MC, Summerlin, DJ, Krowiak, E, Huntley, T, Freeman, S, Borrowdale, R, Tomich, C. Osteonecrosis of the mandible or maxilla associated with the use of new generation bisphosphonates. *Laryngoscope,* 116:115-120, 2006.