

Editorial Article

Osteoporosis : a silent epidemic

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Due to the global aging of population, osteoporosis has become an increasingly prevalent public health problem that represents an enormous economic burden. Moreover, osteoporosis' associated clinical consequences impose significant physical, psychosocial, and financial consequences to the individuals, thus impairing their quality of life.^{1,2}

Osteoporosis or skeletal fragility may be defined as "*increased porosity of the skeleton, resulting from a reduction in bone mass and enlargement of the bone spaces, which leads to a reduced bone density, strength and flexibility*". This systemic disease of the skeleton is highly associated with fragility fractures. During the early stages of the disease, most patients have no symptoms, until the first osteoporotic fracture occurs. The fracture sites associated with the disorder include the vertebrae, hip, pelvis, distal radius, and proximal humerus.^{1,2}

The pathogenesis of osteoporosis has genetic, hormonal and environmental influences, thus characterizing the disease as multifactorial. Age and sex are the most common non modifiable risk factors for developing osteoporosis. Regarding sex, women are mostly affected by osteoporosis, whereas men of the same age have an approximately 50% lower risk of osteoporotic fractures. Although it is well documented that the risk of osteoporosis is higher in women, male osteoporosis should not be underestimated or incorrectly treated. In addition to sex, age is a major determinant of the fracture risk in both women and men.

The risk roughly doubles every decade. More specifically, women over the

age of 40 are mostly affected and according to estimations, by the age of 60 one in four women in the western world will have been affected by osteoporosis to the point of having a significant bone loss.^{1,2}

Furthermore, recent studies demonstrate that an increasing number of young, and physically active, women have also been identified with symptoms of premature osteoporosis. These abnormalities have been observed primarily in trabecular bone, such as the vertebrae, rather than in the long bones. In some cases, active young amenorrheic females may have skeletons typical of that of 55 year old post-menopausal women.^{3,4,5}

However, age and sex are not the only risk factors for osteoporosis. Other risk factors associated with osteoporotic fracture are vertebral body fractures, peripheral fractures, history of a proximal femur fracture, multiple falls, nicotine consumption, immobility, low body weight. Further risk factors that affect the incidence of osteoporosis, also cited in the literature, are the use of certain drugs (eg, glucocorticoids), low physical activity, low intake of calcium and vitamin D and race.^{1,2}

The most widely available and commonly used in practice measurement of bone mass is densitometry. The principle is based on the "T-score", which is expressed as the standard deviation difference between the bone mineral density (BMD) of a patient and that of a young adult female reference population. The World Health Organization considers the following scores as the standard:

- t-score above -1 is considered Normal bone mass.

- t-score between - 2.5 and - 1 is Low bone mass (called osteopenia).
- t-score below - 2.5 is considered Osteoporosis.

The understanding of osteoporotic risk factors together with the early diagnosis that includes assessment of bone mineral density (BMD) are the most essential steps in the process to assess individuals who are at high risk to develop osteoporosis, and thus successfully minimize the impact of this disorder on morbidity, mortality and the cost of health care. Treatment of osteoporosis is divided into basic measures for fracture prevention and pharmacotherapy. Regarding fracture prevention the following measures are indicated:^{1,2}

- Smoking cessation
- Calcium intake: 1200-1500 mg/day
- Regular physical exercise
- Average daily sunlight exposure: 30 minutes
- Optimized medications

In terms of medication for osteoporosis, it should be given for three to five years at first and then re-evaluation of the patient is recommended. If osteoporosis is already manifested, adequate pain control and rehabilitative measures are absolutely necessary. Another significant area related to the prevention of osteoporotic fractures is long-term adherence to the treatment. It

becomes apparent that the level of patient's compliance to the treatment and the instructions should be checked three to six months after its initiation and thereafter at yearly intervals.^{1,2}

Intensive education of the public plays an increasingly vital role in prevention of osteoporosis and has positive effects on the outcome of the disease, since it significantly improves compliance to the osteoporosis instructions.

Bibliography

1. Baum E, Peters KM. The diagnosis and treatment of primary osteoporosis according to current guidelines. *Dtsch Arztebl Int.* 2008;105(33):573-82.
2. Lorenc RS, Misiorowski W, Karczmarewicz E. *Endokrynol Pol.* 2009;60(2):124-33.
3. M, Takahashi K, Ishihara T, Suzuki K, Tanaka H, Seino Y, Makino H: Bone assessments of female long-distance runners. *J Bone Miner metab.*2004;22(5): 509-513.
4. Kazis K, Iglesias E: The female athlete triad. *Adolesc Med.* 2003;14(1):87-95.
5. Donaldson ML: The female athlete triad: a growing health concern. *Orthop Nurs.* 2003;22(5):322-324.