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Reveiw Article

Osteoporosis-A Silent Killer but Preventable

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Abstract

Osteoporosis is an important public health problem leading to an increased risk of spontaneous and traumatic fracture. Osteoporosis is a condition of fragile bone disease and decrease in bone mass density. It occurs mostly after the age of 35 years, bone loss is more in women after menopause. In most cases patient have no symptoms until bone fracture occurs. The diagnosis of osteoporosis can be suggestive by X-ray and confirmed by measuring bone mass density (BMD). There are some effective treatments of osteoporosis but in addition to that stopping of alcohol abuse, smoking and assuring adequate level of calcium and vitamin D is the target to prevent this silent killer disease.

Keyword: Osteoporosis, Fracture, Bone Mineral Density.

Introduction:

Osteoporosis characterized by decrease in the density and strength of bone. As a consequence the bones become soft, fragile and easily become fractured.

Osteoporosis is the most common bone disease, affects a millions a people in the world. The spine, hip, ribs and wrists are common areas of bone fracture and are often asymptomatic.[1]

Pain, disability, deformity and sometimes premature death are the recognized clinical squeal of fracture due to osteoporosis. It also decreases the quality of life, loss of working days and disability upto 30 percent of cases. In addition to that elderly people suffering from pneumonia and thrombo-embolism manifestation. In 20 percent cases of post menopausal women there is imbalance of osteoclastic and osteoblastic activity.[2]

Genetic, lack of exercise, calcium, vitamin-D, smoking, excessive alcohol consumption is the additional key risk factors for osteoporosis.

The diagnosis of osteoporosis can be suggested by X-ray and confirmed by measuring bone mass density.

Epidemiology:

It is estimated that 200 million people have osteoporosis in the world. Osteoporosis becomes more common with increasing age. It is more common in female than male. About 15 percent of white people are affected at the age of 50yrs and 70 percent are affected over 80 yrs. There are 8.9 million fractures in world-wide per year due to osteoporosis. 1:3 in women and 1:5 in men over the age of 50 will have osteoporosis fracture. White and Asian people are at greater risk. About 22 million women and 5.5 million men in the European Union have osteoporosis and in United States 8 million of women and 2 million men are the suffer. This places a large economic burden on the healthcare system due to cost of treatment, long term disability and loss of productivity in the working population. The European Union spends 37 billion courses per year in health care costs related to osteoporosis and the USA spends 19 billion USD annually for related health care cost.[3]

Pathophysiology:

Osteoclastic activity causes is bone resorption and osteoblastic activity causes bone formation is the normal bone physiology. After 40 years bone resorption is more than formation resulting from increase osteoclastic activity and decrease osteoblastic activity.

Underlying mechanism in all case of osteoporosis is that there is an imbalance between bone resorption and bone formation. The three main mechanisms by which osteoporosis develops are an inadequate peak bone mass, excessive bone resorption and inadequate formation of new born during remodeling.[4]

Risk factors for osteoporosis:

This risk factors of osteoporosis are out of control includes:

a) Age: Osteoporosis is more common in the older people.

b) Sex: Female are much more likely to develop osteoporosis then man.

c) Race: White and Asian are greatest risk.

d) Osteoporosis is more likely to occur in people who are low calcium intake, gastro-intestinal surgery, and long term use of oral of injectable cortico-steroid.[5]

e) Alcoholism, Cigarettes smoker, malabsorption, lack of exercise, chemotherapy, poor nutrition etc.

Clinical presentation:

Most patients are asymptomatic and diagnosis is made only after a fracture.

Symptoms:

a) Usually asymptomatic until fracture.

b) Symptom associated with osteoporostic fractures usually band like pain that radiates from the back to the side of the body, loss of height, constipation, kynaposis.[6,7]

Diagnosis of osteoporosis:

Early diagnosis is the key to the prevention and treatment of osteoporosis. Early diagnosis is based on the measurement of bone mass or bone mineral density (BMD). Decreased BMD accounts for 70 to 80% of future fracture risk. BMD can be measured at a variety of skeletal sites using different methods. Currently the gold standard dual energy x-ray absorptiometry is recommended. In addition to detection of abnormal BMD, the diagnosis of osteoporosis required investigation into potentally modifiable underlying cause. This may be done by blood test depending underlining problem and investigation for causes and metestesis.[8,9]

Consequence of osteoporosis:

Bone fracture is the principal consequence of osteoporosis, responsible for pain, decreased quality of life, loss of working days and disability upto 30% of patients suffering from hip fracture. 20% of post menopause women suffer from pneumonia, pulmonary embolism and various complications.

Treatment:

Treatment usually includes a combination of medications and lifestyle modification to slow the rate of bone resorption. Usually osteoporosis is not cured but the goal of treatment is protect and strengthen of the bones.

The most ideal way to prevent bone loss is to take medications such as the following:

Bisphosphonates:

a) These are the most common osteoporosis drugs treatments. They include the following alendronate, ibandronate, risedonate and zoledronic acid.[11-13]

b) Antibodies: Denosumab (prolia) is an recommended antibody.

c) Hormone therapy: Post menopause women are at a high risk for osteoporosis. Estrogen helps to protect bones. Selective estrogen receptor modulators, thyrocalcitonine, parathyroid hormone (PTH)15 are most useful.

d) Lifestyle changes: Getting plenty of calcium and vitamin D in daily diet can help slow bone loss. Regular physical activity and good nutrition and avoidance of smoking.[14, 15]

Discussion:

Osteoporosis is an important public health problem leading to an increased risk of spontaneous traumatic fracture.[1] Osteoporosis is often asymptomatic for many years but most common clinical presentation include back pain, disability, deformity, loss of body weight, kyphosis and inflammatory arthritis[6,7] Cigarettes smoking, excessive alcohol consumption and in coarticosteroid user's the osteoporosis become more common with age. White and Asian people are at greater risk.[5] Normal function of osteoclast is bone resorption and osteoblast is bone mineralization. After the age of 40 years bone resorption is more than bone formation. So, osteoporosis is more common as the age is advanced.[8,9]

In women there is an accelerated phase of bone loss after the menopause due to estrogen deficiency. So, primarily osteoporosis occurs in female after menopause. Treatment goal is to prevent fracture and skeletal deformity increase the bone mass and the relieving the symptoms. Regular physical activity, adequate intake of calcium and vitamin-D, avoidance of smoking and alcohol, reduce stress are the way of prevent osteoporosis.[10]

Treatment usually includes as combination of medications, lifestyle modification to slow the rate of bone resorption.

Most common osteoporosis drugs treatments include bisphosphomates includes alendronate, ibandronate, risedonate.[11-13]

Hormone replacement therapy also helps to prevent osteoporosis in some special cases. It has no cure but preventable disease.[14,15]

Conclusion:

Osteoporosis is the most common bone disease and affects million of people world-wide. Despite the availability of excellent clinical tools to assess fracture risk, osteoporosis remains un diagnosed and untreated. DEXA-Scan is the key investigations for diagnosis of osteoporosis. Underlying mechanism in all case of osteoporosis is an imbalance between bone resorption and bone formation. Osteoporosis usually asymptomatic until fracture. It is non-curable disease but preventable.

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