

OSTEOPOROSIS



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INTRODUCTION:

Osteoporosis is a medical condition characterized by the loss of bone density and deterioration of bone tissue, leading to weakened and fragile bones that are more prone to fractures. It is a common condition, particularly in older adults, and affects both men and women. Common sites for fractures related to osteoporosis include the spine, hips, and wrists.

ETIOLOGY:

- **Age:** The risk of developing osteoporosis increases as a person gets older.
- **Gender:** Women are at higher risk of developing osteoporosis than men, particularly after menopause.
- **Family history:** A family history of osteoporosis may increase the risk of developing the condition.
- **Low body weight:** People with a lower body weight may have less bone mass to draw from as they age, increasing the risk of osteoporosis.
- **Certain medical conditions:** Certain medical conditions, such as celiac disease and inflammatory bowel disease, may increase the risk of osteoporosis.
- **Certain medications:** Certain medications, such as corticosteroids and anticonvulsants, may increase the risk of osteoporosis.

- **Lifestyle factors:** Lack of physical activity, smoking, excessive alcohol consumption, and low calcium and vitamin D intake may increase the risk of osteoporosis.

PATHOPHYSIOLOGY:

- Bone is a living tissue that is constantly being broken down and replaced by new bone tissue in a process called remodeling.
- In healthy bones, the rate of bone loss is balanced by the rate of bone formation, so that bone density is maintained.
- There are two types of cells involved in bone remodeling: osteoblasts, which build new bone tissue, and osteoclasts, which break down old bone tissue. In osteoporosis, there is an increase in the activity of osteoclasts, leading to more bone being broken down than is being replaced by osteoblasts. This leads to a decrease in bone density and an increased risk of fractures.

CLINICAL MANIFESTATION:

- Back pain
- Loss of height
- Rounded or stooped posture
- Easily fractured bones
- Tooth loss

DIGNOSIS:

- **Bone density scan:** The most commonly used test to diagnose osteoporosis is a bone density scan, also known as a dual-energy X-ray absorptiometry (DEXA) scan. This test measures the density of bone in specific areas of the body, usually the spine, hips, and wrists. A DEXA scan can detect low bone density and the presence of osteoporosis.

- **Vertebral fracture assessment (VFA):** This test uses a specialized X-ray machine to take images of the spine to detect any vertebral fractures that may have occurred due to osteoporosis.
- **CT scan:** A computed tomography (CT) scan can be used to measure bone density in the spine and hips.
- **Blood tests:** Blood tests can be used to measure levels of calcium, vitamin D, and other bone-related markers that may indicate the presence of osteoporosis.
- **Urine tests:** Urine tests can measure levels of calcium and other minerals in the body, which can provide information about bone density.
- **Genetic testing:** Genetic testing may be used in rare cases where osteoporosis is suspected to be caused by an inherited genetic disorder.

PHARMACOLOGICAL MANAGEMENT:

- **Bisphosphonates:** Bisphosphonates are a class of drugs that work by slowing down the activity of osteoclasts, the cells that break down bone tissue. Examples of bisphosphonates include alendronate (Fosamax), risedronate (Actonel), and ibandronate (Boniva).
- **Hormone therapy:** Hormone therapy is used to treat osteoporosis in women who have gone through menopause. It involves taking estrogen or a combination of estrogen and progestin to help slow down bone loss. However, hormone therapy may have side effects and risks, so it is important to discuss the potential benefits and risks with a healthcare provider.

- **Selective estrogen receptor modulators (SERMs):** SERMs are drugs that act like estrogen in some parts of the body, such as the bones, but not in others, such as the uterus. Examples of SERMs used to treat osteoporosis include raloxifene (Evista).
- **Calcitonin:** Calcitonin is a hormone that helps regulate calcium levels in the body. It can be used to treat osteoporosis by slowing down the activity of osteoclasts. However, its use has decreased due to the availability of other more effective treatments.

NON- PHARMACOLOGICAL MANAGEMENT:

- **Get enough calcium and vitamin D:** Calcium and vitamin D are essential for bone health. Aim for 1,000 to 1,200 milligrams of calcium and 800 to 1,000 IU of vitamin D per day. Good sources of calcium include dairy products, leafy green vegetables, and fortified foods. Vitamin D can be obtained through exposure to sunlight and fortified foods.
- **Engage in weight-bearing exercise:** Regular weight-bearing exercise, such as walking, jogging, or dancing, can help build and maintain bone density.
- **Quit smoking:** Smoking has been shown to decrease bone density and increase the risk of fractures.
- **Limit alcohol consumption:** Drinking more than two alcoholic drinks per day can increase the risk of osteoporosis.

- **Take steps to prevent falls:** Falls can increase the risk of fractures, particularly in older adults. Taking steps to prevent falls, such as using handrails, wearing supportive shoes, and removing tripping hazards from the home, can help reduce the risk of fractures.
- **Talk to your healthcare provider:** If you have a family history of osteoporosis or other risk factors, such as low body weight, early menopause, or a history of fractures, talk to your healthcare provider about appropriate screening and prevention strategies.