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Review Article

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PATHOGENESIS OF BONE DISEASES: THE ROLE OF IMMUNE SYSTEM AND PREVENTIVE CARE FOR BONE RESORPTION

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INTRODUCTION TO METABOLIC BONE DISEASES

Metabolic bone diseases are one of the several diseases that cause abnormalities or bone deformities.Examples of osteoporosis include osteoporosis, rickets, osteomalacia, osteogenesis imperfecta, marble (osteopristeis), Paget arthritis, and fibrous dysplasia.

According to clinical guidelines, it can lead to bone painand loss of height (due to compression of the vertebrae), and place patients in castles.

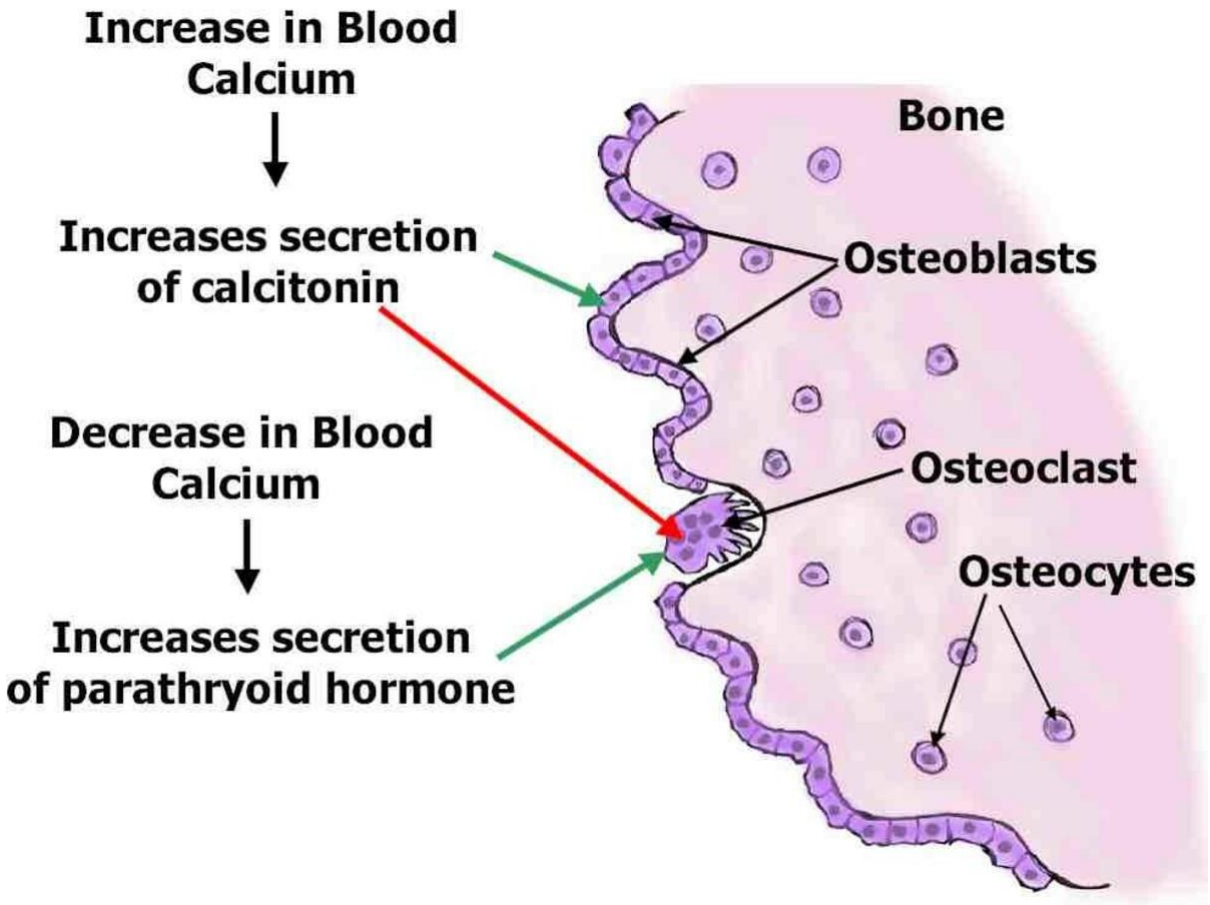
Bones, like many other tissues in the body, continue the process of breakdown and regeneration. This continuous process of bone restoration and formation allows the bones to adapt to the changes needed for healthy function and subtle rehabilitation to maintain greater bone strength and the necessary changes to heal fractures. Normal bone provides strong support and is not brittle. It consists of two main components: A protein matrix, called osteoid, and mineral structures. Osteoid contains a complex protein called collagen, while the mineral structures are made up of calcium and phosphate crystals, known as hydroxyapatite, embedded in osteoid. Bone also contains healthy cells called osteocytes. However, much of the metabolic activity in bone is performed by osteoblasts, which produce a matrix of proteins, and osteoclasts, which are large cells with nuclear elementsthat digest and destroy bone fragments.

Many arthritis diseases are described to the extent that they reduce bone density. Bone mass can be measuredin different bones using radiologic methods. The most commonly measured bones are the bones of the lumbar spine, hip, and radius (arm bone), and the most commonly used procedure is double X-ray absorptiometry. Bone mass is about 30 years old and varies according to sex and nature. For example, bone stiffness is higher in men than women and higher in African Americans than in Europe or Asia. The results of bone measurement are usually expressed in terms of the patient's bone density in relation to the size of the bone mass of people of the same sex and genetic background. The result measurement is known a T-grade. Osteopenia is defined as stiffness of the bone above normal deviation below normal bone height (Tscore −1), and osteoporosis is defined as stiffness of the bones which is two and a half or more deviations below the maximum bone mass (T score .52.5). The results of bone measurements can also be expressedas Z-scores. A Z rating of 0 is bone size that means people of the same age, gender, and genetic background. Low T or Z scores are associated with anincreased risk of fracture.

Role of Inmmune System

Bones and antibodies are both complex tissues that regulate bone sequence and the body's response to invading bacteria. It is now clear that these body systems often cooperate in their functioning. This is especially true of bone marrow cell formation and bone marrow cell function in health and disease.

Because these two studies have been developed independently, researchers in each case do not always fully understand the importance of another system in the functioning of the tissues they are studying. This review aims to provide an overview of the many ways in which bone cells and antibodies interact to better understand the individual's role in the development and functioning of another. It is hoped that awareness of the interaction of these two systems of the body will lead to better treatment of one or both of thesediseases.



Preventive Care For Bone Resorption

1. Well balanced diet

During the phase of growth and development, balanced diet helps attain peak bone mass while in elderly, it helps maintain strength and faster feeling of fracture. A nutrient rich diet particularly rich in calciumand vitamin D, provides the recommended dietaryamount of these nutrients essential for strong andhealthy bones.

2. Physical Activity

Exercising for at-least 30 min daily helps maintain healthy bone. Brisk walking and weight bearing exercises have direct beneficial effect on bones by enhancing bone mineral density (BMD). In elderly walking running and aerobics helps reduce age related bone loss. Performing yoga helps improve balance and co-ordination here by reducing the risk of fall and fracture. However, it is of prime importance to remember that exercising regularly benefits positively. Whereas, performing more intense exercises will have negative effect like reduce bone density.

3. Weight Management

Ideal body weight represents healthy bones and muscles. Being overweight imparts extra pressure onjoints leading to pain and discomfort, while low body mass index increases the risk of osteoporosis and prolonged disability after a fracture.

4. Abstinence from smoking and alcohol

Smoking reduces blood circulation, impedes bone metabolism and decreases calcium absorption. As a result, bone have inferior biomechanical properties leading to weaker bones and delayed fracture healing and hence quitting smoking may help reduce bone loss. Consumption of alcohol is one of the major risk factor for osteoporosis. Also it increase the risk of fallsthat lead to fracturs. Hence alcohol consumption should be limited.

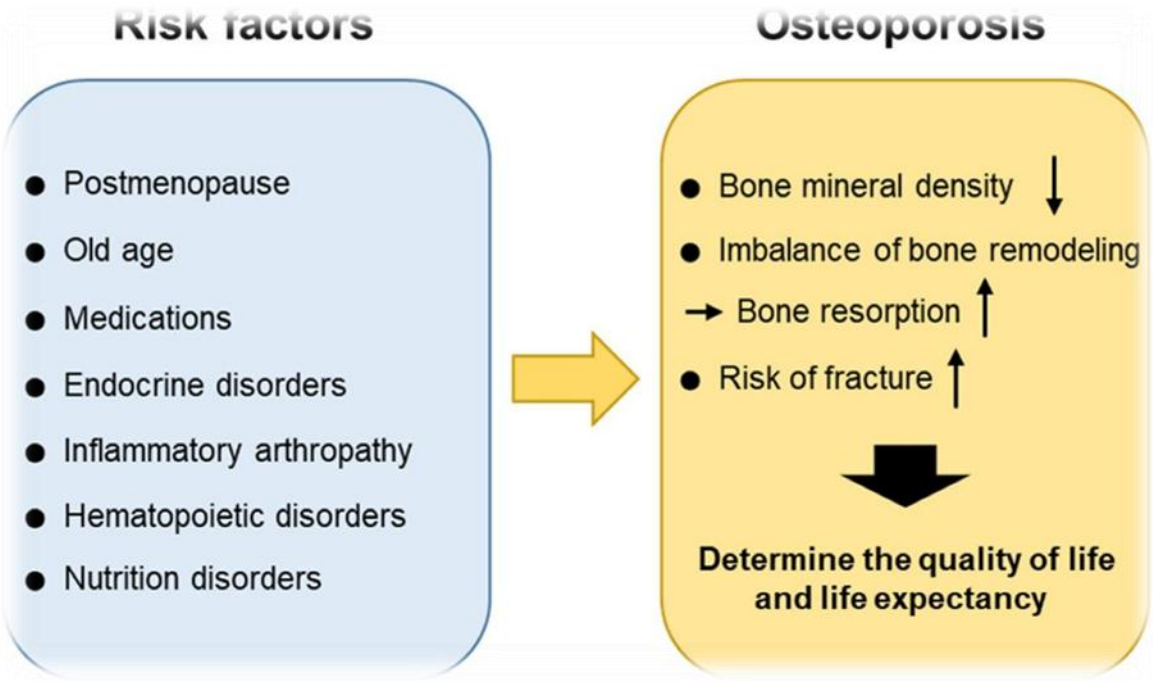
5. Medicinal Side-Effects

Certain medications such as glucocorticoids and antiepileptics cand cause bone loss. Such medications should be consumed after consulting a practitioner.

6. Check on Bone Density

Testing BMD helps determine the risk of osteoporosis and fractures. It is recommended to get the test done within two years of onset of menopause. Women taking medicines associated with the risk of bone loss such as long-term steroid therapy should undergo preliminary BMD test.

Following above mentioned precautionary steps helps prevent bone resorption and lead a quality life.


Risk factors
Postmenopause
Old age
Medications
Endocrine disorders
Inflammatory arthropathy
Hematopoietic disorders
Nutrition disorders
Osteoporosis
Bone mineral density
Imbalance of bone remodeling
Bone resorption
Risk of fracture
Determine the quality of life and life expectancy