

**PATHOGENESIS OF RICKETS AND OSTEOPOROSIS AND METHODS OF TREATMENT**

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**Annotation:** Rickets and osteoporosis are diseases characterized by impaired mineralization and strength of bone tissue. Rickets primarily affects children and is caused by a deficiency of vitamin D, which disrupts the absorption of calcium and phosphorus. Osteoporosis, on the other hand, manifests in adults as a loss of bone mass and increased bone fragility. Treatment involves the administration of vitamin D and calcium supplements, as well as various physiotherapy methods.

**Key words :** rickets, osteoporosis, Vit D, bisphosphonates, growth, formation, nutrition, resorption, thickening and strengthening of bones

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**INTRODUCTION**

We have listed above a number of important sources that contribute to the growth, formation, nutrition, resorption, thickening and strengthening of bones. Diseases resulting from changes in these factors are the relevant part of this article. Examples of these diseases include diseases such as rickets and osteoporosis[1].

Rickets - (from the Greek "rhachitis" - meaning in or of the spine) is a disease that occurs in young children. It is caused by a violation of phosphorus-calcium metabolism due to a lack of vitamin D in the body.

Rickets is often caused by premature birth, malnutrition, or artificial feeding of the child. If the child is not well cared for, does not enjoy the fresh air and sunlight, or is fed improperly, his body does not receive enough vitamin D, or due to a lack of ultraviolet rays, the formation of vitamin D in the skin is impaired, and rickets is aggravated. In addition, frequent illnesses of the child and a violation of the mother's diet during pregnancy also cause rickets.

Rickets leads to metabolic disorders and disruption of the functioning of various organs and systems. In this disease, the metabolism of mineral salts such as phosphorus and calcium is particularly severely disrupted. The absorption of calcium in the intestine and its deposition in the bones changes, which leads to thinning of the bone, softening of its tissues, and disruption of the functioning of the nervous system and internal organs. The course of the disease In the early stages, changes occur in the patient's nervous system: the child becomes timid, irritable, capricious or irritable; he sweats a lot, his face is covered in sweat when he feeds, and his back is covered in sweat when he lies down[2].

The child is bothered by itching, so he rubs his head against the pillow, and the hair on the back of his head falls out. As the disease progresses, the muscles weaken and twitch; the sick child walks later than a healthy child, his stomach swells, and his stomach often becomes hard or distended. Later, the bone system changes: the shoulder blades flatten, the

head becomes larger, the forehead and the top of the skull protrude, the forehead becomes convex, and the bones in the top of the skull and the back of the head soften.

The large cranial fossa does not ossify in time. Often, the ribs near the chest thicken. When the child begins to walk, his legs bend in the shape of an X or an O. The shape of the chest also changes: it either protrudes forward or sinks in. Children with rickets are susceptible to various infectious diseases, especially rickets. Calcium cannot be absorbed into the blood without vitamin D.

Prevention of rickets begins in the prenatal period. A pregnant woman should be in the fresh air as much as possible, strictly follow the regimen, and eat properly. After the baby is born, it is necessary to follow all the rules of care and breastfeed him as much as possible. In the treatment of rickets, vitamin D is administered in combination with other drugs, as prescribed by the doctor. If necessary, therapeutic gymnastics, massage, and irradiation with a quartz lamp are performed according to the doctor's recommendations[3].

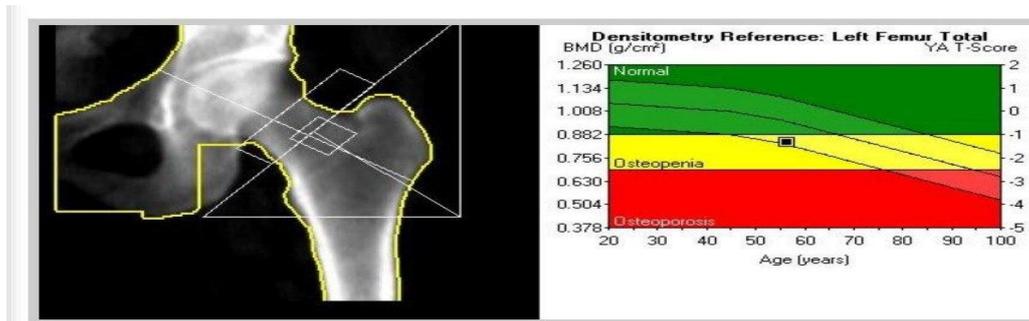
**Osteoporosis** is a bone loss caused by a decrease in the mass of the inner spongy part of the bone and the outer hard part. This disease is more common in women. In addition, the intervertebral disc is also eroded in osteoporosis. In osteoporosis, there are normal amounts of  $Ca^{2+}$  and  $PO_4^{3-}$  ions in the blood, but the bone continues to be eroded. There are 2 main causes of osteoporosis. Primary and secondary causes.

The primary cause is a decrease in the amount of estrogen in women. The cause of the decrease in the amount of estrogen is menopause. Normally, after 40-45 years of age, the menstrual cycle in a woman's body begins to stop, that is, the ovaries cease to function[4]. As a result, the release of estrogen from the ovaries decreases. As we noted above, estrogen inhibits the apoptosis of osteoblasts. A decrease in the amount of estrogen leads to the death of osteoblasts. The death of osteoblasts causes bone loss.

A secondary cause is the ingestion of foreign substances by the human body. These include alcohol, steroid hormones, anticoagulants, anticonvulsants, hyperthyroidism, hyperparathyroidism, multiple tumors, intestinal malabsorption syndrome, and complete loss of appetite[5]. However, the main cause of osteoporosis is a decrease in estrogen levels.

**Osteoporosis diagnosis:** An X-ray examination called DEXA is performed. The areas of the human body that are most prone to fractures are the lumbar region, the hip-pelvis region, and the femoral neck. DEXA is a test of the absorption of radiation into the bones[6].

**Osteoporosis diagnosis result:** A T-score of up to -2.5 is a positive result, and a result higher than -2.5 is a negative result.



**Osteoporosis prevention:** Adequate intake of calcium and vitamin D.

**Osteoporosis treatment:** The main goal of osteoporosis treatment is to stop bone loss and reduce the risk of fractures. The following methods are used for this:

Drugs:

- Bisphosphonates: stop bone loss and increase bone density.
- Calcitonin: reduce bone resorption.
- Raloxifene: modulate estrogen receptors.
- Teriparatide: renew bone tissue.
- Calcium and vitamin D supplements:
- Calcium: necessary for strengthening bone tissue.
- Vitamin D: improves calcium absorption.
- Physical activity:
- Regular exercise: increases bone density and strengthens muscles.
- Weight-bearing exercise: increases bone strength.
- Foods rich in calcium and other nutrients: dairy products, green vegetables, nuts.
- Hormone therapy:
- In postmenopausal women: estrogen therapy reduces bone loss.
- Fracture prevention:
- Safety measures in daily life: be careful to prevent falls.

## CONCLUSION

The supporting and protective function of the human body is the bone. A person should not gain excess weight. Excess weight causes brittle bones. A person should take vitamins and minerals on time. Thanks to movement, a person does work, communicates with people around him (through oral and written speech), engages in physical education and sports. Do not neglect yourself!

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