ACUMEN: INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY RESEARCH
ISSN: 3060-4745 IF(Impact Factor)10.71 / 2025 Volume 3, Issue 3

CAUSES OF OSTEOPOROSIS, METHODS OF DETECTION, PREVENTION AND TREATMENT MEASURES.

Keldiyarova Halena Oybek qizi

Tashkent State Medical University Termez Branch,

1st year bachelor's degree

halenakaldiyarova@gmail.com

Abstract: This article provides comprehensive information on the currently widespread disease osteoporosis. Recommendations are provided on its causes and treatment methods.

Annatsatsiya: Ushbu maqolada hozir kunda keng tarqalgan osteoporoz kasaligi haqida to'liq ma'lumot berilgan. Ushbu kasalikning kelib chiqish sabablari va davolash choralari haqida tavsiyalar ko'rsatilgan.

Аннотация: В статье представлена полная информация о распространённом в настоящее время заболевании остеопорозе. Даны рекомендации по причинам возникновения и методам лечения

Osteoporosis: osteocytes, medical history, x-ray, tomography, osteometry, osteoporosis biopsy, anthropometry

Kalit so'zlar: biokimyoviy usullar, anamnez, rentgen, tomografik, densitometrik usullar, biopsiya tadqiqoti, antropometriya

Ключевые слова: биохимические методы, анамнез, рентгенография, томография, денситометрические методы, биопсия, антропометрия

Osteoporosis (Latin: osteoporosis) is a chronic progressive systemic metabolic disease of the skeleton or clinical syndrome, manifested in other diseases and characterized by a decrease in bone density and increased fragility due to a violation of their microarchitecture. Disturbance of bone tissue metabolism leads to a decrease in bone density and an increased risk of fractures. This definition refers to osteoporosis as a disease of the musculoskeletal system and connective tissue (ICD-10) and complements it with the concept of "metabolic or metabolic disease".

Every year, October 20 is marked as World Osteoporosis Day.

Osteoporotic bone changes have been found in North American Indians. Typical osteoporosis figures can be seen in the paintings of Greek and ancient Chinese artists.

- In 1824, Astley Cooper suggested and drew attention to the increased fragility of bones as the cause of hip fractures in the elderly.

- In 1873, Charcot and Vulpian described the pathology of bone tissue characteristic of osteoporotic changes.

- In 1900, Sudeck announced at the congress of the German Society of Surgeons the discovery of X-ray changes in the hand bone with the "transparent bone image".

- In 1925, Pommer described the clinic of osteoporosis and distinguished it from osteomalacia.

- In 1926, Alwes described osteoporosis in his textbook on internal medicine.

- In 1930, Gerth and Christian Schmorl described the pathoanatomical signs of osteoporosis.

- In 1965, Heaney analyzed the possible mechanisms of osteoporosis development.

- In 1984, William Allbaut founded the modern theory of osteoporosis.

According to WHO, approximately 35% of injured women and 20% of men have osteoporosis-related fractures. In Europe, the USA and Japan, about 75 million people suffer from osteoporosis. In 2000, the number of osteoporotic fractures in Europe was 3.79 million, of which 890,000 were hip fractures. In Europe, osteoporotic fractures are the leading cause of death from cancer (excluding lung cancer). Women over 45 years of age spend more time with osteoporosis than with diabetes, myocardial infarction and breast cancer combined. The number of osteoporotic hip fractures is expected to increase from 500,000 to 1 million per year. Osteoporosis is a polyetiological disease, the development of which depends on hereditary predisposition, lifestyle, physical activity, endocrinological status, the presence of concomitant diseases, medications, human aging, and individual life expectancy.

The maximum amount of bone mass in humans is reached at the age of 20-30. Then, until the age of 35-40, bone mass practically does not change, after which it gradually begins to decrease, and in women the process of bone mineral density loss occurs much faster than in men, which is associated with estrogen deficiency during perimenopause and postmenopause. Bone mineral density: the quality and strength of bone depends on the balance of bone formation and bone resorption processes that occur

simultaneously during the constant renewal of bone tissue, and the causes of bone mineral density loss include:

—disorders of phosphorus-calcium metabolism,

—high levels of parathyroid hormone,

— vitamin D deficiency,

— increased levels of growth hormone,

— increased levels of calcitonin,

— impaired thyroid function,

— increased levels of glucocorticoids,

— aging.

During the growth period, when the formation of bone tissue is disrupted or the balance between bone formation and bone resorption is disturbed, the disruption of its renewal processes increases with a shift in the balance towards catabolism. A decrease in bone mass does not automatically mean that the ratio of bone mineral and organic matter has changed. With osteoporosis, the cortical layer of bone decreases and becomes thinner, the trabeculae of cancellous bone are reduced. A decrease in the strength properties of bone tissue: bone deformation in childhood leads to bone fractures in adults. Osteoporosis is latent for a long time. The patient, without knowing about its presence, receives the first hypotraumatic fractures. In many cases, it causes pain in the vertebral body and forces a doctor to examine it. A single vertebral fracture may be asymptomatic, and if multiple adjacent vertebral bodies are fractured, it causes back pain and typical pain in the thoracic spine, which worsens after prolonged standing or minor physical exertion. In some cases, osteoporosis occurs asymptomatically, in which case a bone fracture is the first clinical manifestation. Compression of the anterior segments of the vertebral bodies causes their wedge-shaped deformation. This leads to a deterioration in posture and a decrease in height. This is caused by damage to the middle segment of the thoracic vertebrae. In this case, the patient does not experience pain, but they develop an “Aristocratic curvature”. In women, the development of scoliosis leads to a restriction of spinal mobility. The most characteristic symptoms of osteoporotic vertebral fractures are pain and deformity of the spine. The pain manifests itself in an acute form. It spreads to the anterior wall of the intercostal space. Attacks are caused by sharp turns of the body, jumping, coughing,

sneezing, heavy lifting. The pain lasts about a week, and after a month the patient can return to normal activities. The aching pain persists and from time to time discomfort persists. The patient has difficulty sitting and standing. One of the severe symptoms of osteoporosis is a fracture of the femoral neck, which can lead to death and disability. Clinicians distinguish between slowly developing and acute osteoporosis. For slowly developing osteoporosis, acute pain is not characteristic at the beginning of the disease. This is associated with a gradually changing deformation of the spine. Despite the gradual onset, acute attacks of pain may occur later. The acute onset resembles the clinical picture of lumbago and is associated with a compression fracture of the vertebral body, for example, after heavy lifting. In the anamnesis, severe pain lasts for 1-2 days without signs of trauma.

Today, it is possible to assess the level of risk of osteoporosis based on a number of objective data obtained from the anamnesis and medical examination results.

Methods for diagnosing osteoporosis:

-clinical with anamnesis (interview, physical examination, physical examination with anthropometry);

-radiological (X-ray, tomographic and densitometric methods) diagnostics;

-biochemical methods;

-biopsy studies.

The patient's history and physical examination are focused on risk factors associated with osteoporosis. Osteoporosis in adults can be suspected by anthropometry of the length of the spine compared to previous measurements. Typically, the length of the spine decreases by up to 3 mm per year with aging, and by 1 cm or more with osteoporosis. "Screening test for osteoporosis risk" has been proposed (IOF patient questionnaire (archived on November 10, 2012 at the Wayback Machine) Archived copy).

Traditional radiography does not detect osteoporosis at an early stage, as it becomes visible on an X-ray when bone density has decreased by a quarter or more. Early osteoporosis is detected by computed tomography or magnetic resonance imaging in the form of foci of reduced bone density (spotty osteoporosis) in the bone tissue. Trabeculae that are less involved in the functional load disappear earlier. Comparison of research data over time is of great importance. Modern computed tomographs allow

you to obtain a three-dimensional model of the bone, measure the density of bone tissue, calculate its volume, the number of trabeculae and the space between them, and assess the distribution of minerals that determine bone strength. Among the variety of densitometric methods for osteoporosis, the "gold standard" is dual-energy X-ray absorptiometry, which allows you to study the axial skeleton, has acceptable sensitivity, sufficient accuracy and is relatively inexpensive. Densitometric criteria for osteoporosis and fracture risk for different densitometry indices were estimated by WHO.

Among the variety of densitometric methods for osteoporosis, the "gold standard" is dual-energy X-ray absorptiometry, which allows you to study the axial skeleton, has acceptable sensitivity, sufficient accuracy and relatively low cost. Densitometric criteria for osteoporosis and the probability of fracture for various densitometric indicators have been assessed by the WHO.

Biochemical methods for determining bone tissue metabolism disorders:

-calcium-phosphorus metabolism and calcium-regulating hormones;

- markers of bone tissue formation and resorption.

The first include: determination of the daily excretion of phosphorus and calcium (as well as calcium relative to creatinine), determination of their levels in the blood, determination of the level of calcitonin, parathyroid hormone, vitamin D. The second: alkaline phosphatase (osteocalcin), acid phosphatase, hydroxyproline, etc. The "gold standard" is the assessment of the level of deoxypyridoline and pyridinoline. As with other diagnostic methods, it is important to compare results over time.

Currently, clinical practice uses drugs that have been shown to be effective in reducing the risk of fractures at various sites (vertebral and nonvertebral) in long-term multicenter placebo-controlled clinical trials. The choice of therapy depends on the specific clinical situation and the individual drug prescription, as well as the preferred route of administration (oral, subcutaneous, or intravenous). The subcutaneous form of such drugs has the advantages of not only ease of adherence, but also cost-effectiveness

Diet for osteoporosis should adhere to the following principles:

The main task of the diet is to ensure adequate intake of calcium and vitamin D from food. For postmenopausal women and men over 50 years of age, the daily intake of calcium from food should be 1200-1500 mg. The appointment of vitamin D in the

elderly is approached with caution due to the risk of accelerating the development of atherosclerosis.

It is recommended to reduce consumption or give up alcohol, smoking, salty foods that remove calcium from the body.

It is recommended to give preference to calcium in soluble forms, such as fermented milk products, although some vegetarians, especially vegans, argue that dairy products, as well as other animal products, are the main cause of osteoporosis. Of course, there are products that contain calcium, which also contain animal protein, which causes acidosis (acidity) of the body, which is neutralized by removing calcium from the bones. Calcium is best absorbed in a ratio of 1 g of fat to 10 mg of calcium. A shift in this ratio in either direction reduces calcium absorption. Magnesium, potassium, and phosphorus play an important role in calcium absorption, and the diet should be balanced for these trace elements. It is recommended to consume enough foods rich in silicon, boron, zinc, manganese, copper, vitamin C, vitamin D, vitamin E, and vitamin K. The generally accepted non-drug method of preventing osteoporosis is lifestyle changes (maintaining physical activity, sufficient exposure to the sun, especially for the elderly population of northern countries, quitting smoking, and alcohol abuse), with special attention paid to the doctor's cooperation with the patient for educational work.

Full sleep;

-maintain the amount of calcium in the daily diet at the level recommended for the region (on average, 1200-1500 mg per day);

-maintain the level of vitamin D. In youth, the required amount of vitamin D is provided by biosynthesis, but in old age and senility, additional administration of vitamin D is necessary, which normalizes the content of calcium in the body and ensures its absorption.;

-maintain a body mass index of at least 19 kg / m2.

Conclusion; It is necessary to eliminate the symptoms of osteoporosis before they appear and not to be indifferent to the disease. The necessary information about treatment methods has been provided.

REFERENCES USED

1. Yabluchanskiy N. I., Lisenko N. V. “Osteoporosis. To help the practitioner.” — Kharkov: XNU, 2011. — 172 p.

2. Rudenko E. V., Buglova A. Ye., Rudenko Ye. V., Samokhovs O. Yu. Drug treatment of osteoporosis in adults. Study guide, Minsk: BelMAPO, 2011 — 22 p.

3. Korotaev N. V., Yershova O. B. Etiology and pathogenesis of bone loss in young women / Osteoporosis and osteopathy, 2006 - No. 2. - P. 19-25.

4. Korovina N. A., Zaxarova I. N., Cheburkin A. V. Phosphorus-calcium metabolism disorders in children. Problems and solutions: a guide for doctors. Moscow: 2005 - 70 p.

5. Korj N. A., Povoroznyuk V. V. Osteoporosis, Book Plus, 2002 - 648 p. ISBN 966-8032-19-5

6. Rudenko E. V. Osteoporozdiagnostika, lechenie i profilaktika, Minsk: Bel. nauka, 2001—153 p.

7. Povoroznyuk V. V., Grigoreva N. V. Menopauza i osteoporoz, K.: Zdorove, 2004—356 p.

8. Kovalenko V. M., Shuba N. M. (eds.) Nomenklatura, klasifikatsiya, kriterii diagnostiki ta programi lekuvannya rheumatichnix xvorob, Kyiv: 2004—156 p.

9. Podrushnyak, Ye. P. Osteoporoz - problema veka, Simferopol: Odissey, 1997. - 216 s.

10. Kanis J. Diagnosis of osteoporosis and assessment of fracture risk. Lancet 2002; 359:1929-36