THE FEATURES OF THE EARLY DIAGNOSTICS OF OSTEOPOROSIS IN PATIENTS WITH RHEUMATOID ARTHRITIS

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Abstract: *in order to detect the clinical course of osteoporosis in 70 patients (56 women, 80.0%, 14 men, 20.0%) with rheumatoid arthritis, clinical, laboratory and instrumental studies were conducted. When addressing to patients with the questionnaire from the International Fund for Osteoporosis, 80.0% of them answered positively to two or more questions. A physical study contributed to the identification of clinical signs of osteoporosis in 17.2-48.7% of patients. With the aid of computed tomographic roentgen densitometry, osteoporosis of the I degree was detected in 40.0%, osteoporosis of the II degree - in 26.7%, and osteoporosis of the III degree - in 33.3% of patients. For patients with OP hypocalcemia was typical.*

Keywords: *rheumatoid arthritis, osteoporosis, computed tomographic roentgen densitometry, hypocalcemia.*

Abstract. Rheumatoid arthritis (RA) is a disease of the joints running with erosive destructive lesions of the peripheral joints. The morbidity rate of RA is 10% in rheumatic diseases and 0.5-1.0% in the general population. Women are three to six times more likely to be ill than men [7; 8; 10]. The development of osteoporosis (reduction of bone density) in RA patients depends on the intensity and severity of the disease. This prolonged process causes spontaneous fractures of the spine and coxofemoral joint. Long-term use of medicines, non-steroidal, anti-inflammatory, hormonal drugs leads to low absorption of calcium in the gastrointestinal tract and calcium deficiency in the body [1-4; 9-11].

Prevention of osteoporosis plays an important role in reducing disability because of the disease, improving the quality of life of patients and improving treatment efficiency [12; 13]. Due to the lack of clear guidelines for the identification of the osteoporosis process, the similarity and generality of the clinical signs of RA and osteoporosis, this process remains under-studied in RA.

The purpose of the research. Evaluation of degree and prevalence of osteoporosis in RA patients depends on density of bony tissue.

Materials and methods of the research. 70 RA patients (56 women, 80%, 14 men, 20%) were undergone clinical, laboratory and instrumental study in the Division I of the therapy department of SamSMI. Among them: patients between the ages of 40-49 years -28 (40%), between the ages of 50-59 - 35 (50%), and patients over the age of 60 - 7 people (10%).

Diagnosis of rheumatoid arthritis is based on the diagnostic criteria proposed by the American Society of Rheumatologists. In addition, more than 30 minutes of morning hardening of the joints, swelling in the joints, symmetrical lesions, damage to the proximal part of the joints, presence of rheumatoid factor in blood and changes in X-ray examination were taken into account. Clinical judgment of patients with RA was made relying on the working classification of RA approved by the Russian Association of Rheumatologists (2007) (Nasonov E.L., 2008).

The DAS28 index was used to determine the RA activity criterion. In the diagnosis of osteoporosis, attention was paid to such important to the patients symptoms as pain in the lower dorsum and limbs, limitation of physical activity, the risk level of bone fracture, the degree of skeletal deformation and movement disorders. The risk of developing osteoporosis was determined by collecting anamnesis from patients suspected of osteoporosis using a questionnaire from the International Foundation for Osteoporosis [2; 3; 9]. Laboratory-instrumental investigations were carried out when a positive response to one or two questions was received. Laboratory data gave evidences about alcalic phosphatase activity in blood serum (p-nitrophenylphosphate hydrolysis method), total calcium (calorimetry method) and phosphorus (ultraviolet test).

A computer-tomographic densitometry examination was performed on the "Bright Speed 16 MDCT" for the diagnosis of OP. The density of bones in X-ray imaging sections was calculated using the relative unit of the Haunsfield (HU) scale. According to researches , the OP process develops firstly in the spine. Bone tissue density index in osteoporosis of I, II and III degree under roentgen densensitometry examination usually is 180-200, 160-179 and 140-159 HU / cm2 in 41-50 years old people; 130-150, 110-129 and 100-109 HU / cm2 in 51-60 years old people; and 105-110, 100-104 and 95-99 HU / cm2 in 61-70 years old people.

The data obtained from research was processed on a Microsoft Pentium IV PC and Microsoft Excel 2007 computer program.

The results obtained and their analysis. When interviewing by the International Foundation for Osteoporosis, on the questions "Do you drink more than once in a week?" - 6 people (8.6%), "Do you smoke more than one pack in a day?" - 6 people (8.6%), "Do you have frequent diarrhea?" - 10 people (14.3%), "Have you ever had bone fractures after a minor injury?" - 12 people (17.1%), "Does your neck tend to drop?" - 24 people (34.3%), "Did your parents have any bone fractures after minor injuries?" - 29 people (41.4%) asked "Did you receive glucose

corticosteroids (prednisolone, etc.) for more than 6 months?" - 24 people (34.3%) for men: "Do you feel decrease of sexual activity?" - 4 men (5.7%) for women: "Were you under 45 when menopause began?" - 11 women(15.7%) and "Have you observed menstruation cessation for more than a year (excluding pregnancy)?" - 24 patients (34.3%) responded positively. 56 patients (80.0%) responded positively to 2 questions of the questionnaire.

Clinical studies allowed to determine such symptoms, incidental to the progress of osteoporosis, like back pain while standing on legs (34 patients, 48.6%),strengthening of pain and feeling disturbances while resting on a couch in course of time, pain of various intensity strengthening from physical labor and cold weather, irregular (30 patients, 42.8%), "duck walk", limb (22 patients, 31.4%), inability to stand even if there is no obvious progress of deformity of joints, backbone pain, malformation of thorax, bow-backed walk, "abdominal hanging" and reduced patient height (in 12-14 patients, 17.1-20.0%). Laboratory tests showed that the total calcium in blood plasma was 1.8 ± 0.02 mmol/L, and in 19% of patients it was normal (2.15-2.9 mmol) and in 81% of patients it was 1.6-1.9 mmol/L (hypocalcemia). The condition of hypocalcemia coincided with the reduction of phosphorus in the blood plasma and the reduction of alkalic phosphatase activity, and these derangements of calcium-phosphorus metabolism showed a decrease in bone tissue density and became a reason for prescription of computed tomographic roentgen densitometry.

Computed tomographic roentgen densitometry showed that the bone density index in all 30 patients was lower than the WHO recommended benchmark, allowing determination of osteoporosis process of various degrees. Osteoporosis of the first degree has been detected in 40% of patients, osteoporosis of II degree - in 26.7%, and osteoporosis of III degree - in 33.3% of patients.

The prevalence and severity of OP increase as patients age: the prevalence of OP and the age of the patients have a direct correlation (r = 0.76). When analyzed by RA activity, the bone tissue density index was 145.0 ± 15.2 at low disease activity, 129.0 ± 10.1 at middle activity, and 112.0 ± 9.3 HU / cm2 at high activity (degrees of activity increase and bone density attenuation levels were in ordinal correlation r = 0.78). The number of patients diagnosed with osteoporosis in the phase II of activity was 9.3% higher than the phase I of activity, In the phase III of activity - 19% higher compared with phase II of activity, and 31.6% compared with phase I of activity. In seronegative polyarthritis, the bone tissue density was 144 ± 10.8 HU / cm^2, which was 129% lower than the seropositive variant (112 ± 10.2 HU / cm^2). The number of patients diagnosed with osteoporosis of seropositive (49.1%) variant was 2.46 times greater than that of the seronegative variant (20.0%). In the derangements of joints activity of the I, II and III degree, bone tissue density decreased respectively: 150±11.1; 127 ± 12.3 and 109 ± 8.5 HU / cm2. The number of patients diagnosed with osteoporosis with derangements of joints in the III degree (80%) was greater than the number of patients with degree I and II of derangements of joints (35% and 60%).

Thus, including the questionnaire from the International Fund for Osteoporosis to the conventional examination in order to determine the OP process in patients with RA, while obtaining a positive answer to one or two question - to determine the amount of calcium, phosphorus, alkaline phosphatase in blood serum with the help of laboratory-instrumental investigation, conduction of computed osteodensitometry of spinal area in terms of instrumental investigation. In the disease, the severity of the OP process and its prevalence rate depend on the disease activity, immunologic variants, and disorders of the joints. For effective treatment of osteoporosis, patients must be informed about their diet, food ration, normalized eating, existing of milk and milk products in the diet, sufficient drinking, degree of physical activity, bodily exercises, body weight control and preventive measures against bone fractures in dwelling place.

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