

Balneotherapy as a key factor in the complex treatment of osteoarthritis of large joints among elderly patients at a sanatorium-resort stage

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Objective. Study of the clinical efficacy of iodine balm therapy in the treatment of osteoarthritis of the knee at the sanatorium-resort stage.

Materials and methods. The study involved 48 patients at the age of 60 years and above with osteoarthritis of the knee joints conforms to the requirements of the American College of Rheumatology and II-III X-ray stages according to Kellegren – Lawrence. The patients of the main group (n=24) received the basic medical complex: iodide-bromine baths (every other day 10 procedures, with a water temperature of 36-37 °C, duration 10 minutes); physical therapy daily number 10-12 procedures, magnetic therapy and manual massage of the joints (daily, number 8). Patients of the control group (n = 24) were not prescribed balneotherapy by iodine-bromine baths.

Results. In a general assessment of the effectiveness of treatment, a decrease in the intensity of pain was observed according to the visual analogue scale in all patients, regardless of the type of physiotherapy. In a general assessment of the effectiveness of treatment, a decrease in the intensity of pain was observed according to the visual analogue scale among all patients, regardless of the type of physiotherapy. The positive result noted among patients of the main group was more pronounced than in the control group. In 60% of patients the psycho-emotional background (mood, sleep) improved, in 67.5% the volume of movements in the joints recovered. In 20% of cases there was a decrease of the level of cholesterol in the blood and in 82% there was a decrease of the content of beta-cross laps (C-terminal telopeptides of I type of collagen) by 20% or more.

Conclusion. Iodine-bromine baths (as in combination with other procedures) are an effective treatment for elderly patients suffering from osteoarthritis of the knee joints

Keywords:

osteoarthritis, balneofactor, age factor

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Osteoarthritis (according to the international classification of osteoarthritis according to modern concepts is a chronic progressive disease of the synovial joints with damage to the first all hyaline cartilage and subchondral bone as a result of a complex set of biomechanical, biochemical and / or genetic

factors [1] . The urgency of the problem is evidenced by the proclamation by WHO of the first decade of the 21st century "the decade of combating diseases of the joints" [4]. According to the statistical reports of the Ministry of Health of Russia, the number of patients with osteoarthritis in 2012 was 3,996 thousand (3429.7 per

100,000 adult population), which is significantly higher than for other rheumatic diseases. 60% of patients with osteoarthritis are persons of disabled age (women older than 55 years old and men older than 60 years old): in 2011 there were 2,262 thousand of them, and in 2012 there were 665.1 thousand [7]. Among the major risk factors for disease are age, obesity, and traumatic damage to the joints [2]. In the development of large joints osteoarthritis, the age factor is of no small importance. With the aging of an organism, changes occur in the joint cartilage. Morphologically, elderly people have: fibrillation, a decrease or asymmetric increase in the thickness of the cartilage, the appearance of horizontal cracks on the border of non-calcified and calcified layers. After 60 years, the number of chondrocytes progressively decreases, the number of empty lacunae increases, degeneration, necrosis and disintegration of chondrocytes increase. All these changes occur mainly in the surface areas of the cartilage. The biochemical manifestations of the natural aging of cartilage consist in a decrease in the water content, chondroitin sulfate (especially chondroitin-4 sulfate), the size of macromolecules of protein glycans, and an increase in keratin sulfate content.

During aging, protein glycans lose their properties to form aggregates from macromolecules, which is explained by the disruption of the interaction of the core protein of protein-glycans and hyaluronic acid. With age, the content of collagen also decreases [6].

At present, the aging of the population continues at a significant pace, and therefore requires the formation of new approaches to solving medico-social problems and therapeutic and preventive care for older people, taking into account the basic laws of aging that affect the current diseases in the elderly [5]. Osteoarthritis treatment presents great difficulties: the difficulty of analgesia due to the negative effect of non-steroidal anti-inflammatory drugs (NSAIDs) on the cartilage, and their poor tolerability, the elderly patients, comorbidity, the need for constant treatment and the difficulty of objectively assessing the effect of therapeutic events [1].

Rational pharmacotherapy may not always be realized, since elderly patients have an average of 3 to 5 diseases, and therefore polypharmacy is inevitable, physical factors are more extensive, especially in the rehabilitation of patients. Their prolonged use is not complicated by the side effect of drug therapy [4]. The

prescription of natural and preformed physical factors that have universality and physiology of action, do not cause adverse allergic reactions, are well matched with other methods of treatment and have duration of effect, is reasonable [5].

Separately, it should be noted the general effect on the body iodine-bromine baths. Iodine-bromine baths, due to the positive effect on the leading physiological systems of the body, significantly but positively affect the course of the pathological process, which is based on impaired metabolic processes and functions of the central nervous and cardiovascular systems. They are usually well tolerated by patients, reduce inflammation in the joints. In our study, for treatment, iodine-bromine mineral water was used, the iodine content of which was not less than 10 mg / dm³, and that of bromine ions — 25 mg / m³. The therapeutic effect of iodide-bromine baths on the patient's body is associated with penetration of 140-190 µg iodine and 0.28-0.30 mg of bromine into the body through the skin, which, when entering the bloodstream, selectively accumulate in the thyroid gland (J-), pituitary and hypothalamus (Br-).

Iodine ions, acting through active transport into the follicles of the thyroid gland, promote the formation of organic substances and thyroid hormones - thyroxine and triiodothyronine, restore the main metabolism in the body. They stimulate protein synthesis and oxidation of carbohydrates and lipids, as well as stimulate the formation of antibodies and reduce the degree of allergization of the body, which is manifested by eosinopenia. Accumulating in the focus of inflammation, iodine ions inhibit alteration and exudation, stimulate the processes of reparative regeneration (structure collagenovye and elastin fibers of the connective tissue), and accelerate the differentiation of the epidermis.

As a result of the therapy, the following main therapeutic effects are achieved: anti-inflammatory (reparative-regenerative), tranquilizing, sedative, metabolic, secretory [3]. The time of the balneotherapy procedures is chosen taking into account the circadian rhythms of the functioning of the physiological systems of the body and the clinical manifestations of the pathological process in patients with osteoarthritis. Morning hours are the phase of activating the functions of homeostatic systems, characterized by the prevalence of excitation processes. Balneotherapy was prescribed in

the first half of the day (from 10 am to 12 am) in order to stimulate regional blood flow, trophic and reparative processes in articular tissues, and also taking into account the revealed shift of the maximum values of systolic blood pressure and heart rate in patients with osteoarthritis for later hours of the day (second half of the day) relative to the norm [Tereshina L.G, 2002].

Objective: to study the knee joints at the sanatorium-resort stage.

Material and methods

The study involved 48 patients, 24 people in each group. Criteria for the inclusion of patients in the study: the age of 60 years and above; osteoarthrosis of the knee that meets the American College of Rheumatology; II - III X-ray stage according to Kellegren - osteoarthritis; lack of contraindications for balneotherapy; lack of NSAIDs; signed informed consent. Exclusion criteria: surgical intervention and intolerance of iodine in the anamnesis; severe diseases of the kidneys, liver, blood, cardiovascular system; signs of infectious disease; IV radiological stage osteoarthritis by Kellegren - Lawrence; NSAIDs. Among patients with knee osteoarthritis, the average age of the examined patients was 65 + 5 years, the average disease duration was 9 + 6 years, all patients had an increased body weight (obesity of 1-2 degrees). Patients were randomized into 2 groups (using the gaming Kub). Upon admission to treatment at the sanatorium, all patients complained of moderate pain in the joints when moving. 66% of patients had painful sensations in the joints during palpation. The limitation of range of motion in the joints due to pain was noted in 34% of patients; a crunch in the joints during movement was noted in 52% of cases, the deformity of the joints was determined in 26% of patients. 95% of patients had comorbidities, in particular, diseases of the cardiovascular system - hypertonic disease of I, II stages (degree of arterial hypertension not higher than 2 degrees), diseases of the spine (osteocondrosis, S- shaped scoliosis).

For verification of the diagnosis, clinical and radiological studies were used (the last type of study was carried out in the absence of the results of examination in the directional medical documentation), ultrasound of the joints, laboratory complex (including blood test on b - cross laps), electrophysiological methods (such as

COBS - diagnostic and bioimpedancemetry). To analyze the symptomatic effect of the treatment, the WOMAC questionnaire (Western Ontario and MacMaster Universities Osteoarthritis index), the VAS visual analogue scale, and the Leken index were used.

The basic medical complex of elderly patients suffering from osteoarthritis included: diet therapy; iodide-bromine baths (administered every other day in the time interval from 10:00 to 13:00 according to the scheme: t - 36-37°C, 10 minutes long, 10 treatments per course); physical therapy (individual and group) - conducted daily, for a course of 10-12 procedures; magnetic therapy with alternating magnetic field and manual massage of the joints (appointed daily, 8 days). This treatment was prescribed to patients of the main group (n = 24). Patients of the control group (n = 24) were not prescribed balneotherapy by iodine-bromine baths.

The analysis of the effectiveness of therapy was carried out by 4 medical examinations, which were carried out before and on the 3rd, 6th day of treatment, as well as on the day of the patient's discharge from the sanatorium. At the same time, subjective data, objective examination data, dynamics of laboratory parameters (general clinical, biochemical blood tests) and test values (visual analogue scale VAS, etc.) were taken into account. One of the main criteria for the effectiveness of the treatment was to reduce the intensity of pain according to visual analogue scale (VAS), not less than 40% of the initial level.

Statistical processing of the results was performed using the statistical package of IBM SPSS Statistics 22.

Results and its discussion

There was a decrease in pain in the "target" knee joint. (Index WOMAC, section A) by $\geq 40\%$ of the initial level. In a general assessment of the effectiveness of treatment, positive dynamics of the subjective symptom complex was noted, in particular, in 100% of patients, pain syndrome regressed (regardless of the intended type of physiotherapy). Changes and non-painful symptoms in patients under the influence of the treatment were traced. In particular, a psycho-emotional background (mood, sleep) has improved in 60% of holidaymakers.

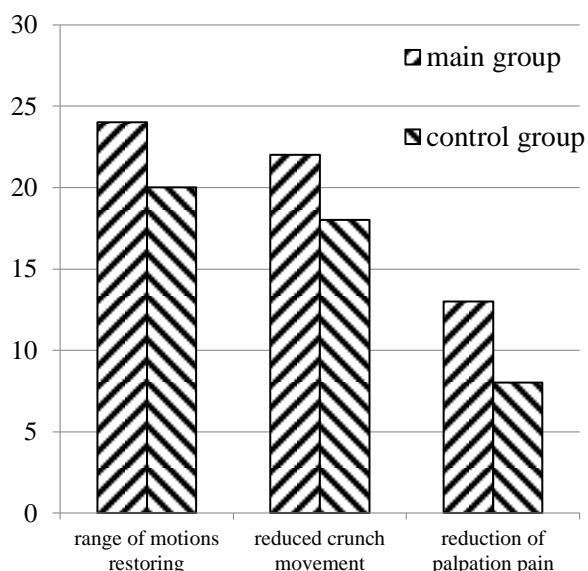


Figure. Evaluation of the effectiveness of treatment in the observed groups.

The volume of movements recovered from 67.5% of holidaymakers. In laboratory studies, among other things, changes in the lipid spectrum were dynamic (in 20% of cases there was a decrease in blood cholesterol) and positive dynamics in blood b-cross laps (in 82% there was a decrease in this indicator by 20% and above).

With a comparative dynamics of the results of treatment, the positive dynamics in both groups of observation draws attention to itself,

however, the positive result observed in patients of the main group was more pronounced.

Table. The impact of the treatment on the clinical picture of osteoarthritis

Patient group	Clinical effect	The proportion of patients with this outcome
The main group (n = 24)	Observed	7
	Significant	17
	Not visible	0
The control group (n = 24)	Observed	12
	Significant	12
	Not visible	0

Conclusion

Iodine-bromine baths (in combination with other procedures) are an effective method for treating elderly patients with osteoarthritis of the knee joints.

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