

# Physio-balneotherapy factors in the complex treatment of patients with gouty arthritis at the sanatorium stage of rehabilitation

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**Purpose:** to analyze and summarize the main approaches to the appointment of the main physiotherapeutic and balneological factors in the complex treatment of patients with gouty arthritis in the conditions of sanatorium treatment.

**Material & Methods:** analysis of modern scientific and scientific-methodological literature on the problem of physical rehabilitation of patients with gout.

**Results:** the main approaches to the appointment of modern methods of physiotherapy in combination with hydrotherapeutic and mud factors in the complex treatment of patients with gouty arthritis at the sanatorium stage of rehabilitation.

**Conclusions:** the results of the study can be used as a basis for compiling a comprehensive physical rehabilitation program for patients with gouty arthritis in a sanatorium stage of rehabilitation.

**Keywords:** gouty arthritis, physio-balneotherapy, sanatorium stage of rehabilitation.

## Introduction

It is known that gout is a chronic disease associated with a violation of purine metabolism, an elevated uric acid in the blood and the deposition of its salts in the tissues of the body, most often in the tissues of small joints of the toe or hand and in the kidney [4]. The most common manifestation of gout is gouty arthritis [1]. In the course of the disease, two periods are identified: the period of exacerbation (gouty period) and postoperative (inter-attack) period. In the inter-attack period, patients complain of the stiffness of movements in the damaged joints, stiffness, and the appearance of a crunch during movement and the gradual development of deformation [12], which leads to disability. Favorable conditions for preventing the progression of deformation in the joints and recovery of motor functions, according to the majority of authors [6; 10; 14], is the treatment of patients with gouty polyarthritis during the inter-attack period in a sanatorium. Studies of some authors [6; 14] established indications and contraindications to the recommendation of patients with sanatorium-and-spa treatment.

In the literature there are single papers [4; 9], which deal with the use of individual physical rehabilitation in the treatment of gout patients, but there is insufficient research devoted to the generalization and systematization of the appointment of a complex of physiotherapeutic and balneological factors to patients with gouty arthritis during the interictal period in a sanatorium, and was the prerequisite of our work.

**Relationship of research with scientific programs, plans, themes.** The work was carried out in accordance with the priority thematic area 4.48.3 "Medico-biological justification for the implementation of rehabilitation measures and the appointment of physical rehabilitation to young people of varying degrees of fitness". Number of state registration – 0116U004801.

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### Objectives of the study:

1. On the basis of the analysis of modern medical and scientific-methodical literature, to present the etiopathogenetic and clinical characteristics of the gout and its complications – gouty arthritis.
2. To reveal the main tasks of physiotherapy during the interictal period of gouty arthritis at the sanatorium stage of rehabilitation.
3. To provide basic approaches to the appointment of modern methods of physiotherapy in combination with hydrotherapy and mud therapy for patients with gouty arthritis at the sanatorium stage of rehabilitation.

## Material and Methods of the research

Analysis of modern scientific and scientific-methodological literature on the problem of physical rehabilitation of patients with gout.

## Results of the research and their discussion

It is known that gouty arthritis is one of the manifestations of a severe chronic disease – gout, which is based on a violation of uric acid metabolism with the accumulation of its salts in the tissues of the joints [1; 12]. According to the etiopathogenesis of the disease, a number of authors [4; 9; 10] distinguish two types of gout – primary and secondary. Primary (as an independent disease) gout arises from the genetic heredity of abnormalities of purine metabolism, secondary – to the main of certain diseases and disorders, risk factors which may be the presence of a person with diabetes, psoriasis, chronic kidney failure, congenital heart disease, leukemia, endocrine diseases, alcoholism, as well as long-term use of certain drugs (as-

pirin, citramone, Ascophene, riboxin, furosemide, etc.). The dominant etiologic risk factor for gout, according to research by some authors [1; 16], is a metabolic disorder due to a significant intake of meat and fatty foods against hypodynamia. In recent years, studies by several authors [1; 4] have shown that the development of gout in men is sometimes associated with the characteristics of the endocrine system, namely, the lack of a sex hormone-estradiol, which is capable of spreading this disease several times more than women.

Gradually, as a result of violation of purine and lipid metabolism, uric acid salts accumulate in the joints with the formation of gouty knots – tophus, which are most often located in the joints of the toes (especially in the first-finger joint of the 1st finger), fingers of the hand, tibia, knee, radiocarpal joints, that is, gouty polyarthritis develops [6]. In the development of clinical manifestations of gout, A. S. Svinitsky co-authored. There are three stages: premorbid, intermittent and chronic. It is in the intermittent and chronic stages of the disease that periods of exacerbation of the disease (attacks of gouty arthritis) and interictal period [1].

During periods of exacerbation there are complaints of passionate, unbearable pains in the joint or joints, hyperemia and swelling of the joint tissues, chills, sometimes a fever, a violation of motor function. Gradually, during intergenerative periods, as a result of repeated gouty attacks, joint deformation develops: stiffness, contracture and loss of efficiency [1; 16].

It is in the intergenerative gouty period that some authors [3; 9; 10; 15] emphasize the important role of physiotherapeutic and balneological factors in the complex treatment of patients. The tasks of physiotherapeutic and balneological factors in the interictal gouty period are [8; 15]:

- improvement of blood and lymph circulation in the tissues of the joints
- improvement and normalization of trophic processes in the joints;
- improvement of metabolism and, above all, purine and lipid metabolism;
- prevention of exacerbation of arthritis;
- prevention of deformities and stiffness in gout-damaged joints;
- improvement and normalization of musculoskeletal function;
- improvement of the patient's psychological status;
- Tempering the body;
- restoration of working capacity.

To solve these problems, patients with gouty arthritis in the interictal period are prescribed a wide arsenal of preformed physical factors, balneotherapy, mud therapy, physiotherapy exercises and therapeutic massage [3; 7; 10]. These therapeutic acting physiologic-neologic methods are desirable to be prescribed to patients in the conditions of sanatorium-and-spa treatment. According to the studies of J.-R. M. Fedorov, 2004, the greatest value of balneological factors for gout at balneological resorts are radon, sulphide, sodium chloride and other baths. In the author's opinion, radon and sulphide baths in combination with the use of alkaline mineral waters, rational dietary nutrition, increased motor conditions, the use of therapeutic gymnastics and massage significantly improve the exchange of purine metabolism, normalizes microcirculation and trophic processes in joints, improves locomotor

function and prevents progression the process [14].

In balneological resorts, patients with gouty arthritis, according to the majority of authors [3, 8; 13], peloidotherapy (mud therapy) should be prescribed, using mud, peat mud in the form of mud baths, mud wraps of the joint or application technique, galvanic mud procedures and electrophoresis with a mud solution according to generally accepted procedures. Mud, according to M. V. Loboda et al., 2007, contribute to the optimization of local blood circulation, improves microcirculation in the joint tissues and processes of cartilage tissue regeneration, dissolves salts of uric acid in articular and periarticular tissues [3]. However, most authors [14; 15; 17] emphasize the need to take into account some individual characteristics of the body of a sick person when using balneological factors. Contraindications to the appointment of hydrotherapy and peloid therapy is the presence in patients with gout concomitant somatic pathology with significant changes in the cardiovascular system (moderate-onset CHD, hypertension II B-III, heart rhythm disorder, congenital heart disease, severe atherosclerotic cardiosclerosis), as well as malignant neoplasms, pulmonary tuberculosis, severe cachexia, a period of exacerbation of the gouty process, the presence of a "gouty kidney" [14].

According to several authors [13; 15; 17], in the general complex of sanatorium-and-spa activities, attention should be paid to the treatment of gout patients and physiotherapy apparatus, with which conditions are created for the restoration of metabolic processes, the reduction and complete elimination of residual inflammation in the joints, the improvement of local microcirculation and restoration of locomotor function. At the sanatorium stage, rehabilitation specialists, physiotherapists [7; 9; 14] recommend to assign differentially physiotherapeutic apparatus methods to patients from a wide arsenal of physical factors depending on the nature of the residual phenomena of the inflammatory process in the joints, the presence or absence of complaints, joint deformation, disorders of the musculoskeletal function, concomitant somatic chronic pathology and individual characteristics of the organism of the sick person. The most favorable physiotherapeutic methods for solving these prerequisites are:

- drug electrophoresis with novocaine or analgin solution, potassium-lithium to relieve pain syndrome, electrophoresis with a solution of zinc to stimulate metabolism in the tissues of the joint [1]. Contraindication to the appointment of this method of treatment is the individual intolerance of galvanic current and the presence of pyoderma [17].
- magnetotherapy in order to eliminate residual inflammation in the joint tissues, increase local microcirculation and relieve pain. Contraindications to the appointment of magnetotherapy in patients with gout is the presence of a concomitant chronic pathology in which all physiotherapeutic methods (that is, general contraindications) are contraindicated, as well as the presence of a pacemaker in a patient [13];
- ultrasound therapy or phonophoresis with hydrocortisone in a labile technique, using a continuous or pulsed regimen. By changing the permeability of cell membranes, the energy of mechanical ultrasonic vibration enhances the diffusion and osmosis processes, improves local microcirculation and metabolism, promotes resorption of uric acid salts in articular, periarticular tissues of the joints, activates mechanisms

of nonspecific immune reactivity. Therapeutic effect of mechanical vibrations is manifested by anti-inflammatory, analgesic, trophic, resolving, immunostimulating effects [11]. Ultrasound therapy and phonophoresis are not prescribed to patients during the period of exacerbation of gouty arthritis, with gouty lesions of the vascular system, as well as patients with concomitant IHD, chronic cardiovascular insufficiency of II B–III st., In disorders of cerebral circulation, arterial hypotension, diabetes, in the presence of "gouty" kidney and other diseases, in which all methods of apparatus physiotherapy are contraindicated [1];

– laser therapy. Zone irradiation of joints and reflexogenic zones is carried out by contact scanning method in the infrared range or helium-neon laser. The mechanism of the action of laser radiation is associated with the ignition-induced effects at the level of molecules and atoms, the action of thermal energy, the influence of the electromagnetic field, the presence of photochemical and photoelectric effects, and the therapeutic effect is manifested by anti-inflammatory, analgesic, trophic, immunostimulating effects [11]. To date, a number of physiotherapists and balneologists [8; 15; 17] argue that the only reasonably valid contraindication to the appointment of laser therapy is neoplasm, but should not be used in pregnant women, in patients with epilepsy, in persons with pacemakers and with hormonal disorders.

– transcerebral pulse electrotherapy. According to M. M. Orekhov, 2012, Lediuk's pulsed low-frequency rectangular currents have a positive influence on the central mechanisms of various metabolic processes, improve carbohydrate, lipid, purine metabolism, carry out sedative, analgesic effect, improve and normalize endocrine and immune status the body of a sick person. Contraindications to the appointment of transcerebral pulse electrotherapy is individual intolerance to the current, inflammatory eye diseases, glaucoma, facial skin dermatitis, hysteria, arachnoiditis and general contraindications to apparatus physiotherapy [13].

Physiotherapists [13; 14] emphasize that the choice and purpose of the physiotherapy apparatus method from the

forementioned to the patient gouty arthritis depends not only on the period of the flow and the stage of the disease, but also on the individual characteristics of the organism and the presence or absence of concomitant chronic pathology. Physiological factors combine with therapeutic massage and therapeutic physical culture, which significantly affect the improvement of purine and lipid metabolism and are capable of increasing and restoring motor activity in the joints [2; 9].

## Conclusions

1. At the heart of the development of gouty arthritis is a violation of the metabolism of uric acid with the accumulation of its salts in the tissues of the joint. The course of the disease is chronic, with periods of exacerbation (gouty attacks) and interictal periods.

2. In the complex treatment of patients in the interictal gouty period, an important role belongs to balneotherapy, peloidotherapy, apparatus physiotherapy combined with rational dietary nutrition, enhanced motor regimen, therapeutic gymnastics and therapeutic massage, which are successfully used in balneological resorts.

3. The analysis of the scientific and methodological literature on this problem made it possible to determine that the main approaches to the appointment of methods of apparatus physiotherapy in combination with water and mud therapy in the complex physical rehabilitation of patients with gouty arthritis is the recording of the stage, course of the disease, individual characteristics of the organism, the presence of chronic concomitant somatic pathology, as well as contraindications to the appointment of each of the above methods of physiotherapy.

**Prospects for further research** are related to the scientific substantiation of the submitted and consistent use of physiologic-neologic methods with therapeutic physical culture and therapeutic massage in the inter-ardity period of gouty arthritis in patients of junior and middle age with different degrees of fitness in conditions of sanatorium-and-spa treatment.

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