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THE EFFECTIVENESS OF PILOIDOTHERAPY IN REHABILITATION

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Abstract: The article describes the conditions of formation, structure and properties of various types of therapeutic mud. The pathogenetic mechanisms of their therapeutic effect, techniques and methods of procedures, indications and contraindications for use are described.

Keywords: Therapeutic mud, musculoskeletal system, diseases of the nervous system, diseases of the genitourinary organs, diseases of the digestive system, respiratory diseases, skin diseases.

Therapeutic mud, or peloids (pelos — silt, mud), are natural formations consisting of water, mineral and organic substances, representing a homogeneous finely dispersed plastic mass characterized by certain thermal properties.

The use of mud for medicinal purposes has a thousand-year history. In the papyri of Ancient Greece, therapeutic mud was called “the earth that heals all kinds of wounds.” The most suitable for medicinal purposes are silt deposits of salty reservoirs (silt sulfide mud), silt deposits of freshwater reservoirs ((sapropel is rotting silt) and peat formations of swamps (peat mud). There are seven mud lakes in the Irkutsk region, famous for their healing properties.

The origin of mud is associated with the vital activity of microorganisms, resulting in the accumulation of biologically active substances (enzymes, hormones), colloids and the formation of gases in them (CH4, H2S, H2, CO2 N2).

The structure of all therapeutic mud is a complex physico-chemical system that includes three interrelated parts: mud solution, mud skeleton and colloidal complex. The liquid phase of the therapeutic mud (mud solution) consists of water and salts dissolved in it, the solid phase consists of a coarse part of the mud, a colloidal complex consists of salt crystals, silicate particles of various sizes, undecomposed plant residues, etc.

The listed types of mud differ significantly in terms of their formation conditions, chemical composition and physico-chemical properties.

Silt sulfide mud is characterized by the predominance of mineral components over organic substances. They are characterized by high mineralization of the mud solution. The content of sulfides (FeS) causes their dark gray color. The salinity of mud is determined by climatic and soil zones and can fluctuate in different seasons of the year. This dirt should have the smell of hydrogen sulfide, be soft to the touch, and smear well on the body. The water content in it should not be lower than 30 and not higher than 70%, and the contamination with particles with a diameter of more than 0.25 mm should not exceed 3%.

Sapropel mud, formed due to the decomposition of lower plant and animal organisms in freshwater bodies, is characterized by a high content of organic substances. Another feature of sapropel mud is its high water content — up to 95%. The color of sapropels is very diverse. It can be brown, bluish and even pink. Sapropel mud has good plasticity, viscosity and stickiness. They have a high specific heat capacity and at the same time a reduced heat transfer. They contain a large number of different chemical elements (cobalt, manganese, copper, zinc, boron, molybdenum, iodine, bromine, etc.) and vitamins (B, C, D, B12, fiboflavin, folic acid, etc.).

The composition of peat formed due to the decomposition of higher plants is dominated by organic substances. These muds form at the bottom of swamps and contain hydrogen sulfide, which is usually in free form. The water content in peat reaches 65-90%. The colloidal base of peat consists of humic substances (humus is humus). The more of them there are in peat, the higher its moisture capacity,

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ductile-viscous and thermal properties. The main indicator of the suitability of peat For mud treatment, the degree of its decomposition is important. Well-decomposed peat has a high moisture capacity and high heat retention capacity.

Silt sulfide mud can be used for medicinal purposes in its natural state, peat mud often requires dilution with water, sapropel mud, on the contrary, must be wrung out.

Despite the differences in properties and structure described above, they also have common features that unite them into a group of therapeutic mud that can form a homogeneous plastic mass when mixed with water . The colloidal structure determines the consistency therapeutic mud, gives it viscosity and plasticity. Due to colloidality, the therapeutic mud is soft to the touch, spreads well on the body, adheres tightly to the skin and is relatively easily washed off with water. For therapeutic use, only those muds that have good ductile-viscous,

sticky and thermal properties are recommended.

The ductile-viscous and sticky properties depend on the water content in the mud. The thermal properties of therapeutic muds include specific heat capacity, thermal conductivity and heat-retaining ability.

The biological composition of the mud includes putrefactive aerobes, anaerobes, oily acid bacteria, fungi, molds and other non-pathogenic bacteria.

The presence of pathogenic flora indicates a poor sanitary condition of the mud and is prohibited for medicinal use. According to the Industry Standard (OST 42-21-16-86) “Departments, physiotherapy rooms, general safety requirements", coli-titer for silt mud 10 and above, titer-perfringens — 0.1 and above.

For vaginal and rectal mud treatment, only fresh, unused mud is used.

The therapeutic effect of peloids depends on their physical and chemical properties, heating temperature, location and the area of application, the duration of the procedure, the amount per course of treatment and the order of appointment (daily, every other day, two days in a row followed by a one-day break, etc.). The dosimetric parameters of the procedure are determined by the general condition of the person and the nature of the pathological process.

In the mechanisms of action, the leading therapeutic value is the heat of the mud, which provides optimal conditions for the realization of the chemical factor. The thermal factor increases metabolism in tissues, increases microcirculation and transcapillary metabolism. Chemical factors (minerals, organic acids and compounds, vitamins, trace elements, biogenic stimulants, etc.), activated by heat, act directly on the skin and underlying structures. Penetrating into the skin, chemical elements and compounds form a kind of chemical mantle at the site of exposure and are a source of long-term chemical influence on the human body. Acting on numerous skin receptors, they cause not only local, but also general reactions of the whole the body. When applying heated mud, hyperemia always appears in the affected area, which indicates an expansion of the microcircular bed.

During mud treatment, there are distinct hormonal shifts, indicating the involvement of the hypothalamus, pituitary gland and peripheral endocrine glands. The effect of peloids is associated not only with an increase in hormones, but also with an increase in the sensitivity of cells and tissues to them. Under the influence of peloidotherapy , blood supply to tissues improves, intracellular metabolism increases, which is accompanied by accelerated tissue regeneration, anti-inflammatory and analgesic effect, increased protective adaptation systems of the body. It is noted that against the background of mud treatment, the utilization of medications is accelerated, which is accompanied by potentiation of therapeutic effects.

General mud treatments (mud is applied to almost the entire surface of the human body) and mud baths (from 5 to 20 kg of mud per 180 liters of water or brine) are rarely used. They are stressful for

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many patients, often lead to the development of balneopathological reactions and exacerbation of diseases.

The technique of local (local) exposure is more convenient and economically advantageous, in which therapeutic mud is applied to any part of the body: hands (gloves), hands and forearms (high gloves), lower body and legs (trousers, short trousers, underpants), collar area, joints, lower back, etc.

For after the procedure, a flannelette or cloth blanket is laid out on the couch, an oilcloth is placed on top of it, a bedding (a sheet made of coarse canvas) is placed on it. On the litter in the place where the part will be located the body to be exposed is coated with a layer of therapeutic mud of the prescribed temperature. The patient is placed on a mud cake 3-6 cm thick, the affected area of the body is carefully coated with mud, after which it is sequentially wrapped

with a sheet, oilcloth and blanket. The duration of the mud treatment is 15-20 minutes. At the end of the procedure, the patient is untangled, the therapeutic mud is removed from him and he washes himself in the shower. After washing, the patient should rest in the rest room for 20-30 minutes. The procedures are carried out every other day or two days in a row followed by a one-day break. The course of treatment consists of 7-12 procedures. The optimal heating temperature of the mud is 38-42 °C.

Vaginal mud treatment is widely used for gynecological diseases not only in resorts, but also in extracurricular conditions. To do this, use silt or sapropel mud.

When carrying out vaginal mud treatment, it is necessary to thoroughly clean the therapeutic mud from foreign impurities by wiping through a fine metal sieve or through gauze, carry out constant bacteriological control and do not use used (regenerated) therapeutic mud.

There are various ways to inject heated dirt into the vagina. They are most often used a double-leaf Cusco mirror or a rubber tube. The heating temperature of the mud is 38-45 ° C. Vaginal mud treatment is often combined with applications of dirt to the abdomen and pelvis. Treatment is carried out every other day or two days in a row, followed by a one-day break. The duration of the procedure is 30-40 minutes. The course of treatment ranges from 7 to 15 procedures. At the end of the procedure, the dirt is removed from the vagina and douching is performed with mineral water or a disinfectant solution heated to 38-42 ° C.

In rectal mud treatment, dirt is injected into the rectum using a special syringe. Before its administration, the patient must empty the intestines and bladder. The introduction of dirt is carried out in the knee-elbow position of the patient. Its introduction is carried out slowly so as not to cause an urge to defecate. After introducing dirt into the rectum, the patient should lie on his stomach for 10-20 minutes, and then turn on his left side. The total duration of the procedure is 30-60 minutes, but is often limited the urge to defecate. The temperature of the heated mud is 38-45 ° C. The procedures are carried out every other day or two days in a row, followed by a one-day break. The course of treatment consists of 10-15 procedures.

Vaginal and rectal mud treatment is performed according to the prescriptions of a gynecologist, urologist, proctologist.

In addition to classical mud treatment, combined mud treatment procedures are currently widely used in resorts and especially in non-resort conditions. Among them, galvanic, diadinamo, amplipulse mud therapy, pelophonotherapy have become the most widespread. When carrying out these procedures on gauze bags (made of several layers of gauze) filled with dirt from 1 to 4 cm thick are placed under the electrodes or the ultrasonic head. The temperature of the mud is 38-42 °C. Electrical procedures and ultrasonic exposure are carried out within the framework of standard dosimetric parameters.

Electrophoresis of mud solution, which is obtained in the process of dehydration of mud, is also widely used in clinical practice. Hydrophilic pads are wetted with a mud solution or medicinal pads

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made of filter paper or 2-4 layers of gauze are placed under them. The effect is carried out according to the usual parameters of electrophoresis. The resulting native mud solution is stored in a dark glass container at a temperature of +4+10°C. Its shelf life is 4-6 months.

A mud farm is a system that includes a therapeutic mud deposit and balneotechnical facilities for its operation. The mud deposit should be carefully protected as an area of medicinal importance. Three sanitary protection zones are being established around it. It is not allowed to place dwellings or keep livestock in the first zone (100 meters), to plant vegetable gardens, etc. The boundaries of the zone must be marked or fenced. In the second zone (2-3 km from the center of the mud deposit) there should be no objects that worsen the ecological condition of the mud deposit. The third zone is the boundaries of the sanitary protection of the sanatorium as a whole. The boundaries of the deposit and the sanatorium are approved by the administration of the region and have the force of law.

The mud clinic of the sanatorium includes the following structural units:

• a room for undressing patients at the rate of 2 m2 On the couch;
• treatment room at the rate of 8 m2 On the couch;
• one shower for two couches;
• mud tampon treatment room (14 m2 per workplace);
• a room for heating and preparing mud for procedures (mud kitchen) at the rate of 4.5 m2 per couch;
• a room for washing sheets and tarpaulins (at least 18 m2);
• a drying chamber with a temperature of +50 + 55 ° C.;
• mud storage at the rate of 12 m2 on the couch with the presence of regeneration wells;
• a staff rest room at the rate of 2 m2 on one couch.

The amount of required dirt is carried out at the rate of 20-30 kg per procedure in sanatorium-resort facilities and 10-12 kg in non-resort conditions.

Dirt storage is carried out in basements with natural light at a temperature of +10+15°C. For the storage and regeneration of dirt (recovery after therapeutic use), the mud storehouse is equipped with supply and exhaust ventilation with air exchange +2 — 10.

The storage and regeneration of mud takes place under a layer of water from this lake or 5% sodium chloride solution. The optimal thickness of the water layer (brine) is 20-30 cm. The period of mud regeneration is determined by the survival time of the pathogenic microflora. Dirt is not reused after rectal and vaginal treatment. Indications for mud treatment Mud treatment is performed at the stage of attenuating exacerbation or remission of chronic diseases.

1. Diseases of the musculoskeletal system:

• arthropathies (infectious, inflammatory, arthrosis): the consequences of rheumatic polyarthritis (not earlier than 6-8 months after the end of acute events); rheumatoid arthritis in the inactive phase or with minimal activity of the process; reactive arthritis with the activity of the inflammatory process not higher than 1st.; psoriatic and enteropathic arthropathies; gout; osteoarthritis;
• dorsopathy and spondylopathy: kyphosis, scoliosis, osteochondrosis of the spine (with various neurological syndromes), damage to intervertebral discs, inflammatory spondylopathy, etc.;
• soft tissue diseases and consequences of bone injuries: myositis, muscle contractures, muscle atrophy; synovitis, bursitis, tendovaginitis, fibrositis; osteopathies and chondropathies.

2. Diseases of the nervous system:

• lesions of individual nerves, nerve roots and plexuses (of various origins);
• disorders of the autonomic nervous system;
• consequences of injuries to roots, plexuses, nerve trunks, brain and spinal cord;
• consequences of surgical removal of benign tumors of the nervous system;
• consequences of polio, encephalitis, encephalomyelitis, arachnoiditis;

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• cerebral palsy.
3. Diseases of the genitourinary organs:
• chronic pyelonephritis, pyelitis;
• chronic cystitis, urethritis;
• diseases of the male genital organs (chronic
prostatitis, orchitis, epididymitis, etc.);
• diseases of the female genital organs (chronic salpingoophoritis, metritis, endometritis, pelvic peritoneal adhesions, sexual infantilism, female infertility).
4. Diseases of the digestive system:
• peptic ulcer of the stomach and duodenum, uncomplicated course, in remission;
• intestinal diseases: irritable bowel syndrome, consequences of an infectious lesion, dyskinesia, diseases of the rectum;
• liver diseases: consequences of viral hepatitis;
• diseases of the gallbladder, biliary tract and pancreas: chronic cholecystitis, cholangitis, pancreatitis;
• digestive disorders after surgery for gastric ulcer and duodenal ulcer, cholecystectomy;
• consequences of inflammatory processes in the abdominal cavity.
5. Respiratory diseases:
• diseases of the upper respiratory tract (tonsils, larynx, paranasal sinuses);
• residual effects after acute pneumonia;
• chronic bronchitis outside the exacerbation or in the stage of attenuating exacerbation;
• the consequences of undergoing lung surgery.
6. Skin diseases:
• dermatitis and eczema;
• papulosquamous disorders (psoriasis, lichen planus, etc.);
• diseases of the skin appendages (nest alopecia, acne, etc.);
• scarring and trophic skin changes.
7. Diseases of the ear and mastoid process.
The main contraindications
• Acute inflammatory processes
• Malignant and benign tumors
• Cystic formations
• Blood diseases and bleeding of any localization
• Tuberculosis of any localization
• Cardiovascular diseases with circulatory disorders of stage I and above
• Cardiac arrhythmias and complete blockages
• Pregnancy at all times
• Mental illness
• Epilepsy
• Tendency to seizures
• Cirrhosis of the liver
• Thrombophlebitis
• Thyrotoxicosis
On mud treatment days, you should not take water, air and helioprocedures. Mud treatment is incompatible with ultraviolet irradiation in erythemic doses.

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Mud treatment on different days is widely combined with baths of various chemical compositions and hardware physiotherapy. In the case of daily combined effects of mud therapy and hardware physiotherapy, an interval between procedures of at least one hour.

In case of balneopathological reactions (deterioration of well-being, increased clinical manifestations of the disease), correction of dosimetric parameters of procedures or their cancellation is necessary.

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