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Effectiveness of intravenous laser blood irradiation (ILBI) and local laser therapy in optimizing conservative treatment of pneumonia

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Abstract: Treatment of pneumonia is a pressing tissue at present, due to its widespread prevalence and associated severe complications, such as pleurisy, emphysema, cardiovascular diseases, glomerulonephritis, exacerbation of allergic diseases. Laser therapy, if there are appropriate indications, can be performed on children of any age from birth. However, it is necessary to take into account the characteristics of young patients, know the rules for prescribing laser therapeutic procedures, schemes for choosing the most optimal methods and their parameters, which differ significantly from those recommended for adults.

The works devoted to this topic are analyzed, the rules for selecting parameters and principles for choosing laser therapy methods are systematized, taking into account the age and state of the child's nervous system, allowing for treatment to be carried out as safely and effectively as possible.

Keywords: laser therapy, pediatrics.

Introduction: Laser therapy (LT) has long been successfully used in practical healthcare not only by physiotherapists, but also by doctors of other clinical specialties, which is facilitated by a deep understanding of the mechanisms of the biomodulating action of low-intensity laser radiation (LILI), the historical continuity of the method, its absolute safety and the highest efficiency. The LT methodology is well developed for use in almost all areas of modern medicine: pediatrics, obstetrics and gynecology, endocrinology, andrology and urology, dermatology and cosmetology, neurology, otolaryngology, psychiatry, dentistry, etc.

Pediatrics is no exception, although for laser illumination of children, LT methods are significantly adjusted, it is necessary to take into account the physiological characteristics of young patients, know the rules for prescribing laser therapeutic procedures, schemes for choosing the most optimal methods and their parameters, which differ significantly from those recommended for adults. If there are appropriate indications, laser therapy can and should be performed on children of any age from the moment of birth, but it is imperative to know the features of the methodology.

The child's body is highly labile, its reaction to even the most minimal laser exposure is much stronger than that of adults, and the younger the child, the more pronounced. Therefore, the energy parameters of laser therapy methods are important first and foremost, and their selection must be approached with extreme care.

The adaptive capacity and initial state of the child's body also largely predetermine the clinical effectiveness of the treatment as a whole. The correct assessment of the state of the neuroendocrine and cardiovascular systems, metabolism and psycho-emotional state of the child is essential for laser therapy of children and adolescents. The parameters of the technique are adjusted in accordance with these data.

The article for the first time brings together and systematizes well-known and time-tested rules for optimizing laser therapy methods in pediatrics.

Peculiarities of choosing laser therapy methods in pediatrics. First of all, we are talking about the appropriateness of the appointment and use of such methods as VLOC and intracavitary procedures. Clinical experience shows that the use of modern laser

therapeutic devices and LT methods in most cases allows us to abandon invasive methods of laser illumination in pediatric practice.

Indications

The MATRIX and LAZMIK series laser therapeutic devices are used for non-invasive and cavity laser therapy in many areas of medicine. The devices are intended for professional use by doctors in a wide range of medical institutions.

MAIN EFFECTS OF LASER THERAPY:

- Reduction of pain syndromes of neurogenic and organic nature
- Correction of immune system parameters
- Improving hemodynamics
- Pronounced anti-inflammatory and anti-edematous effect
- Activation of reparative and regenerative processes
- Restoration of homeostasis regulation systems

INDICATIONS FOR USE

THERAPY: ischemic heart disease, angina at rest and exertion, post-infarction cardiosclerosis, hypertension, vegetative-vascular dystonia, diseases of the gastrointestinal tract and musculoskeletal system

SURGERY: wounds, burns, frostbite, bone fractures, traumatic injuries of internal organs, infiltrates, purulent diseases of soft tissues and bones, proctitis, paraproctitis, anal fissures, furuncles, carbuncles, phlegmon; phlebitis, thrombophlebitis, obliterating endarteritis, trophic ulcers, hemorrhoids, lymphadenitis, heel spurs.

ENDOCRINOLOGY: autoimmune thyroiditis, diabetes mellitus, endocrinopathies.

NEUROLOGY: chronic cerebral ischemia, rehabilitation after stroke, osteochondrosis, radiculitis, cervical-brachial syndrome, neuritis and neuralgia of various localizations, neuroses, multiple sclerosis, pain syndrome.

GASTROENTEROLOGY: gastritis, gastric ulcer and duodenal ulcer, pancreatitis, diffuse liver damage, liver cirrhosis, biliary dyskinesia, acute and chronic cholecystitis, colitis.

PULMONOLOGY: bronchitis, bronchial asthma, acute and chronic pneumonia, pulmonary tuberculosis, pneumosclerosis, pleurisy.

ENT DISEASES: eczema of the auricle, external auditory canal, otitis, salpingootitis, rhinitis, sinusitis, tonsillitis, adenoids, pharyngitis, laryngitis.

UROLOGY: acute and chronic pyelonephritis, urolithiasis, cystitis, urethritis, prostatitis, pathology of spermatogenesis, Peyronie's disease, enuresis, sexual disorders, infertility.

OBSTETRICS AND GYNECOLOGY: perineal ruptures during childbirth, cracked nipples, lactation mastitis, mastopathy, dysfunctional uterine bleeding, endometritis, endocervicitis, cervical erosion, acute and chronic adnexitis, chronic salpingo-oophoritis, vulvovaginitis, vulvar kraurosis, infertility, fetoplacental insufficiency.

DERMATOLOGY, COSMETOLOGY: neurodermatitis, eczema, psoriasis, allergic dermatitis, herpes, warts, abscessing acne, epidermophytosis, alopecia, prevention of skin aging.

DENTISTRY: uncomplicated dental caries, pulpitis, periodontitis, herpetic stomatitis, desquamative glossitis, lesions, ulcers and erosions of the oral mucosa, exfoliative cheilitis, chronic cracked lips, chronic sialoadenitis.

PEDIATRICS: diseases of the bronchopulmonary system and gastrointestinal tract, infectious diseases.

SPORTS MEDICINE: rapid restoration of athletes' performance after sports overloads, injuries, activation of a productive psychophysical state before important competitions.

Contraindications

Contraindications to the appointment of laser therapy procedures are divided into general and specific. It should be noted that there are no absolute and specific contraindications to laser therapy (except for phobia and individual intolerance), however, depending on the patient's condition, the phase of the disease and other factors, some restrictions are possible.

GENERAL CONTRAINDICATIONS FOR LASER THERAPY*

- Hemorrhagic syndrome
- Neoplastic syndrome
- Hyperthermic syndrome (fever; patient's body temperature over 38 °C)
- Syndrome of systemic (cardiac, vascular, respiratory, renal and hepatic) and multiple organ (general severe condition of the patient) failure
- Cachectic syndrome (sharp general exhaustion)
- Epileptic syndrome
- Hysterical syndrome
- Convulsive syndrome

Specific contraindications for the use of combined and combined laser therapy methods in urology and andrology, taking into account the features of the Matrix-Urologist device

For vibration magnetolaser massage:

- Exacerbation of general infections and purulent diseases
- Increased body temperature
- Exacerbation of chronic prostatitis and chronic urethritis
- Tuberculosis of the genital organs
- Prostate cancer and stones
- Anal fissures
- Proctitis, paraproctitis
- Exacerbation of hemorrhoids
- Presence of acute infections

For local laser negative pressure (LLNP):

- Inguinal and inguinoscrotal hernias
- Varicose veins of the spermatic cord 2nd and 3rd degree
- Thrombophlebitis of the veins of the pelvis and lower extremities
- Hydrocele of the testicle and membranes of the spermatic cord
- Phimosis and paraphimosis
- Acute inflammatory diseases of the genital organs.

For intravenous laser irradiation (illumination) of blood:

- Myocardial infarction in the subacute and scarring periods
- Post-infarction angina
- Anemia (Hb<80g/l)
- Circulatory failure stage IIa–III

Specific contraindications for the use of combined and combined laser therapy methods in gynecology, taking into account the features of the Matrix-Urologist device

- Uterine fibroids
- Itching of the vulva due to diabetes mellitus, helminthic invasion
- Acute bartholinitis in the abscess formation stage
- Suppurating Bartholin's gland cyst
- Ovarian tumors and cysts

Laser therapy procedures for women begin on the 5th-7th day of the menstrual cycle.

Pregnancy, age, active tuberculosis, cancer and the presence of benign prostatic hyperplasia (BPH) are not absolute contraindications for laser therapy, however, in this case, only specialists with the appropriate profile should prescribe and carry out procedures.

Physiotherapy for children of all ages should begin with minimal dosages and duration of procedures, daily monitoring of the local and general (well-being, sleep, appetite, activity, etc.) response to the treatment and gradually changing (increasing) both parameters if the patient reacts adequately. In preschool children, the first procedures are best performed in the presence of a doctor who can objectively assess the child's reaction, clarify the technique and adjust the parameters of the effect. The chronobiological approach to organizing physiotherapy increases the effectiveness of the latter due to the synchronization of external influences with the physiological state of the child's body.

Objective of the study. To substantiate and evaluate the effectiveness of intravenous laser blood irradiation (ILBI) and local laser therapy in optimizing conservative treatment of pneumonia.

METHODS

About 120 newborn children with grade 1 respiratory failure pneumonia were examined; the dynamics of immunological parameters under the influence of VLOC and local laser therapy were studied in these children.

RESULTS

The study of immunological indices in children with pneumonia reliably suppressed immune system. After intravenous laser irradiation of blood in patients gives high clinical and immunological efficiency. After treatment with local laser therapy, immunological indices did not change significantly, which indicates low clinical efficiency.

The processing of the obtained results by the Student's criterion showed that with VLOC for IgM the criterion tpac = 2.38, IgG tpac = 2.62, IgA tpac = 1.42 with the tabular value of the criterion ttable = 2.04. It follows that the comparison shows a good effect of VLOC for IgM, IgG, and for IgA the changes are insignificant. With local laser therapy, the same indicators were for IgM tpac = 2.08, IgG tpac = 1.94, IgA tpac = 1.14, which shows the low efficiency of this method.

CONCLUSIONS

The high efficiency of the method of intravenous laser irradiation of blood in pneumonia has been proven, which leads to the normalization of immunological parameters, prevents local signs of the disease and helps to reduce the length of hospital stay.

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