

Information-wave technologies of diagnostics and treatment in patients with purulent lesions of bones and large joints

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Despite the achieved success in the treatment of trauma patients with purulent surgical infection, the incidence of chronic the inflammatory process in this category of patients remains quite high. This is facilitated by the presence of severe mechanical trauma, iatrogenic defects in treatment, a change in the spectrum of pathogenic flora causing suppuration, as well as disturbances in the activity of the body's immune system [6, 7, 8].

Osteomyelitis is detected in 3–24% of cases after open fractures and in 1–7% after surgical treatment of closed fractures. In 20–30% of previously operated patients, there is a relapse of the inflammatory process. Even in children, chronic inflammation occurs in 10–60% of cases of hematogenous osteomyelitis [5]. The development of implantology in orthopedics was the cause of the occurrence of purulent complications in the area of large joint endoprostheses in 1.0–9.6% of cases [8].

In the pathogenesis of chronic osteomyelitis, first of all, it should be noted the violation of the elimination of pathogenic microorganisms from the purulent focus, due to the excessively wide and not always sufficiently justified use of antibiotics. This leads to a significant increase in antibiotic-resistant strains of microorganisms, a change in their species composition, the appearance of associations of pathogens, an increase in the frequency of fungal infection.

[one].

In the acute stage of hematogenous and post-traumatic osteomyelitis (OM), there are significant pathogenetic differences depending on the primary or secondary development of bone necrosis and purulent infection. With the transition to a chronic course, these differences are leveled, and the nature of the process is determined by the development of sequestration of bone tissue, the presence of purulent cavities with the formation of fistulous passages. It is these factors that contribute to the preservation of purulent foci that are the main reason for the recurrent course of chronic OM.

A special group is made up of patients with postoperative chronic OM developing after arthroplasty of large joints with severe dystrophic lesions. Among these patients, suppuration after hip and knee arthroplasty was observed 1.5–3 years after surgery. Purulent-inflammatory processes after these traumatic operations with large blood loss were caused by the direct negative effect of the endoprosthesis on the bone and surrounding soft tissues. This led to the development of edema in the area of the prosthetic

joint, bone resorption, the formation of an endoprosthesis purulent leaks around and in the soft tissues of the thigh.

In the presence of purulent-inflammatory processes spend bacteriological examination of fistulous secretions with determination of sensitivity to antibiotics. The limitations and disadvantages of this approach are well known. These include: the duration of bacteriological

research; dependence of research results on the quality of collection, storage and delivery of material; differences in the cultural characteristics of isolated microorganisms, their cultivation; often a single bacteriological study, only before the start of antibiotic therapy, etc. The latter circumstance is of particular importance in connection with the possibility of changing the microbial landscape of the wound contents due to the addition of a nosocomial infection or the development of septicemia of microorganisms from distant foci. The use of antibiotic therapy "blindly" in the absence of fistulous secretions is also problematic. The non-optimal appointment of antibacterial drugs leads to the emergence of resistant strains of microorganisms, a change in their species composition and the addition of a fungal infection.

The worsening of the course of chronic osteomyelitis is also facilitated by the addition of dysbiosis, which changes the species composition of the microbial flora in areas of the gastrointestinal tract, upper respiratory tract of body pathways, skin and the mouth.

As a consequence this, large practical interest presents the possibility of using the electropuncture method diagnostics of microbial flora in the dynamics of treatment of chronic OM, as well as weak electromagnetic therapeutic effects on the course of the chronic inflammatory process. These are methods: electropuncture vegetative resonance test (ART) and bioresonance therapy (BRT).

The purpose of this study was to evaluate the results of using these methods in the diagnosis and treatment of patients with pyoinflammatory diseases of the skeletal system and large joints of the extremities.

Material and methods

We observed 39 patients aged 11 to 66 years with chronic osteomyelitis of various localization. Of these, 10 children with hematogenous osteomyelitis aged 11 to 16 years, and 15 men and 14 women aged 18 to 66 years. Diagnostic studies and therapeutic effects were performed on the equipment of the Center for Intelligent Medical Systems "IMEDIS". We used a computerized IMEDISEXPART apparatus for electropunctural diagnostics, drug testing, adaptive bioresonance therapy and electro-, magnetic and light therapy using BAP and BAZ. The patients who participated in the study did not receive pharmacotherapy in accordance with the treatment standards.

The indications for the use of ART and BRT were the conditions of patients (low-grade fever, purulent discharge from the fistula, pain syndrome) with various clinical forms of acute and chronic osteomyelitis (postoperative, post-traumatic, hematogenous).

The algorithm for performing ART in patients with purulent infection of the bones and large joints of the extremities included the following sequential stages:

- determination of the reproducible point and the choice of the preparation of the pineal gland;
- identification of the presence and localization of endogenous and exogenous foci and interference fields;
- testing of mesenchymal blockages and their arrangement by layers and sublayers;

- determination, through the reserves of adaptation or biological indices, the nature (sanogenetic or pathogenetic) of the identified blockages;
- identification of pathogens and affected organs;
- verification of pathogens that are the cause of the purulent process;
- determination of the appropriate therapeutic resonance frequency program and complex homeopathic preparations.

The selection of the technology for BRT included several successive stages. At the first stage, in a hospital setting, resonance frequency therapy (RFT) was performed with frequencies inherent in the identified pathological microorganisms, against the background of exposure to baseline endogenous BRT. In this case, the frontal electrodes of the apparatus were placed directly on the area of the pyoinflammatory focus, and purulent discharge from the patient's fistula was placed in an inverse container for BRT. Hand and foot electrodes were connected to the hands and feet. An endogenous BRT session was performed in a sequential therapy mode. The duration of the session is 30 minutes, for the course there are 5–7 daily sessions. The number of endogenous BRT sessions is determined by the dynamics of adaptation reserves, and in the event of their deterioration, further endogenous BRT was considered inappropriate. Besides, to treat the detected infection, inductors were additionally applied to hand and foot electrodes. Sessions (from 5 to 7) were carried out according to the algorithms described in the guidelines [2, 3, 4]. Every three days of treatment with the help of ART, the effectiveness of the resonance-frequency therapy was determined. Patients with total endoprostheses of large joints received RFT directly through the electrodes for endogenous BRT in order to avoid pain in the area of the endoprosthesis. During a session of exo and endogenous bioresonance therapy, a preparation was created with frequencies recorded on the crumbs. Patients took this drug between sessions twice a day. Every three days of treatment with the help of ART, the effectiveness of the resonance-frequency therapy was determined. Patients with total endoprostheses of large joints received RFT directly through the electrodes for endogenous BRT in order to avoid pain in the area of the endoprosthesis. During a session of exo and endogenous bioresonance therapy, a preparation was created with frequencies recorded on the crumbs. Patients took this drug between sessions twice a day. Every three days of treatment with the help of ART, the effectiveness of the resonance-frequency therapy was determined. Patients with total endoprostheses of large joints received RFT directly through the electrodes for endogenous BRT in order to avoid pain in the area of the endoprosthesis. During a session of exo and endogenous bioresonance therapy, a preparation was created with frequencies recorded on the crumbs. Patients took this drug between sessions twice a day.

After 7 days, the next stage was carried out, lasting from 4 months or more. The treatment was aimed at maintaining a high level of immunity and general lymphatic drainage of patients. The patients were examined by the ART method once a month, and they underwent a correction of therapy with complex homeopathic preparations from "HEEL" Germany (lymphomyosot, coenzyme compositum, ubiquinone compositum), and from OHOM (Italy).

It is important to note that the structure of the altered bone tissue regenerates slowly, requiring long-term follow-up and treatment. Organopreparations of bone tissue were prescribed by us with caution, since their prolonged use increased arthritic processes and pain in the area of large joints unaffected by the inflammatory process. Best of all, bone tissue regeneration occurred under the influence of seroimmune preparations from OHOM.

Results and its discussion

In children, *Staphylococcus aureus* was detected as a causative agent in 8 cases using ART, in one case - the presence of *Staphylococcus aureus* with *Proteus*, in another case - the association of *Proteus* and cytomegalovirus.

Further comparative study showed complete agreement of the above data with the results of bacteriological examination of blood in children.

In adult patients, using ART in 16 cases, *Staphylococcus aureus* was detected, and in 5 of them the second pathogen was also present, in three cases the pathogen was not tested. In 10 cases, ART identified pathogens such as: pyogenic streptococcus - 3; coagulase-positive streptococcus - 2; hemolytic streptococcus -3; mold of the second type - 1; *Chlamydia trachomatis* - 1. In adults, in 13 cases, a bacteriological study of fistulous secretions was carried out, and in 7 cases of blood culture followed by a bacteriological study. In 8 cases, *Staphylococcus aureus* was inoculated from the fistulous secreted. In the remaining 5 patients, the growth of microflora was not obtained. The pathogen was not identified in 6 patients with blood culture. In 9 patients, microbiological examination was not carried out due to the absence of fistulous secreted.

Thus, in 20 out of 29 adult patients (in the coincidence of the diagnostic results by the method microbiological research. In 5 out of 13 patients (in the same patients gave a positive response to the presence of pathogenic flora. In one case, a complete discrepancy of the results was obtained - ART has determined the presence *Staphylococcus aureus*, but through microbiological study of blood culture in this painful stomatococcus.it was sown

In a number of patients, in the course of long-term BRT therapy, a change in the tested microorganisms was noted, which required a correction of the treatment. Apparently, the patients had a mixed infection, which gradually manifested itself in the course of therapy.

In children, only endogenous resonance therapy. Additionally, they received the drug with the recorded treatment frequencies. As a result of the therapy, recovery was noted in all children.

During the period of hospital stay, the first stage of BRT was applied in 27 patients, of whom 24 underwent endogenous BRT and RFT, and in 3 only BRT. Later, after being discharged from the hospital (at the next stage), for a long time the patients received only complex homeopathic preparations of the companies "HEEL" and "OHOM".

Under the influence of BRT, clinical recovery was obtained in 17 patients, the effectiveness of the therapy was 43.6%. All 17 patients showed a tendency to bone tissue restoration after one month. In three out of 17, the inflammatory process was completely eliminated after 6 months, in another 2 after 7 months, in the remaining 12, the resolution of the inflammatory process occurred after 10 months. Unfortunately, none of the patients with purulent complications after total arthroplasty of large joints were able to achieve clinical recovery.

Thus, our experience in the use of energy-information technologies has shown their rather effective capabilities both in the diagnosis and in the treatment of patients with purulent-inflammatory diseases of the skeletal system and large joints. These methods do not contradict, but can successfully

complement the therapeutic tactics of academic medicine used in this category of patients.

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