Using the BRT method for biocorrection of stress syndrome

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The urgency of the problem

Most relevant problem of contemporary medicine is an pathogenetic substantiation of treatment methods. In practical terms, icine she honey is solved through basic research and medical practice.

Traditional means of influence on the brain used in the treatment of stress syndrome and its consequences, which are currently at the disposal of pharmacologists and clinicians, are ineffective. They practically do not reduce the danger of the formation of pathological systems of the brain in response to an external electromagnetic effect, they have not only a polyvalent effect that is not always safe for the body, but also have a symptomatic nature, not including the intellectual, emotional and behavioral spheres, which prevents the restoration of the impaired functions of animals and humans (Beyer E.V., Arushanyan E.B., 2001; Kolbun N.D., 2003).

Get adapted to biological organisms pharmacological preparations with very strict selectivity of action are an extremely difficult task. The scientific substantiation of the principle of treatment "similis similibus curantur" - like to be treated by like and "contraris contrarius curantur" - the opposite is treated by the opposite, formulated by Hippocrates (Zilov V.G. et al., 2000), are becoming increasingly relevant in our time.

The purpose and objectives of the study

To develop an ecological-adaptive method of biocorrection of stress syndrome for the treatment, prevention and rehabilitation of patients by means of new innovative methods of bioresonance therapy.

1. Elimination of dominant foci of generalized excitement and restoration of the neuropsychiatric and structural-functional state of the brain during the formation of stress syndrome.

2. To determine the nature of the influence of the biocorrection method on the structural functional changes in limbic structures and neuropsychiatric state of laboratory animals.

3. The introduction of a promising direction of BRT in veterinary and clinical medicine to prevent and avoid side effects the effects of medications.

Research results

results the experiment is confirmed opportunity use eco-adaptive principle causal biocorrection of pathological foci of excitation in the limbic structures of the brain using the BRT method, to restore structural and functional disorders of all body systems.

Taking into account the histological and biochemical features, it was the hippocampus that became the main target of targeted bioresonance exposure, as the main cause triggering the effect - stress syndrome.

We made an individually informational preparation for the hippocampus area. This drug - these are specific combinations electromagnetic resonance frequencies from the detected pathological zones of the hippocampus, appearing after audiogenic stimulation in the kindling mode, which were then transferred with the help of equipment to the matrix in an inverted form (Kudinova E.V., 2003).

Comparative analysis of the effect of bioresonance therapy (BRT) on the structural and functional state of the hippocampus and the neuropsychiatric state of experimental animals during the formation of stress syndrome was carried out on two groups of animals. Experimental animals were divided into two groups: animals without BRT drug (group I, n = 32) and animals taking BRT drug (group II, n = 32).

Analysis of variance (Kruskal-Wallis ANOVA) in rats of group I in all sectors of the hippocampus revealed statistically significant changes in all studied parameters, and in group II - in all parameters except for the number density of hypochromic neurons in sector CA1. The degree of structural and functional changes was significantly different depending on the sectors of the hippocampus and the use of BRT.

A completely different dynamics of the total number density of neurons and the content of reactively changed cells was characteristic of the hippocampus of white rats of group II. In all sectors of the hippocampus of animals of this group, when paired comparison in terms of time with group I using the Kolmogorov-Smirnov test, a statistically significantly higher total numerical density of neurons and a lower content of reactively changed neurons were revealed.

Comparative analysis between the groups revealed the neuroprotective effect of BRT, in contrast to the group without BRT, which manifested itself by the end of the experiment (90 days) in the CA sector.one preservation of 30% more neurons, in the sector on the CA2 - 11.1% of neurons in the CA sector4 - 18.2% of neurons (respectively, $p < 0.05$, $p < 0.05$ and $p < 0.025$). In the CA sector3 differences in the total numerical density of neurons were detected only 21 days after the start of the experiment and amounted to 25.0% ($p < 0.001$). When paired comparison in terms of the CA sectorone in the hippocampus of animals of group II, the content of hypochromic neurons was two times higher than in group I, only after 21 days of the experiment. The content of non-wrinkled hyperchromic neurons did not differ statistically significantly at any time, and the content of wrinkled neurons was 2–3 times ($p < 0.001$) higher than that in group I.

In the CA sector2 of the hippocampus of animals of group II, the content of hypochromic neurons did not differ, and the content of non-wrinkled and wrinkled hyperchromic neurons significantly exceeded that in group I. the content of shrunken hyperchromic neurons (3 times, $p < 0.01$) - 14 days after the start of the experiment.

In the CA sector3 of the hippocampus of animals of group II, the content of hypochromic neurons did not differ, and the content of non-wrinkled and wrinkled hyperchromic neurons, as in the CA sector2, exceeded that in group I. However, the degree of difference was lower and the peak of the maximum differences fell on other periods. The maximum difference (2.5 times, $p < 0.001$) in the content of unwrinkled hyperchromic neurons was noted after 60 days, and in

the content of wrinkled hyperchromic neurons (3 times, p <0.01) - after 21 and 90 days.

The greatest differences in the content of hypochromic neurons were found in the CA sector4. 14 days after the beginning of the experiment in animals of group II these cells were 2.5 times (p <0.05) more than in animals of group I. However, after 30, 45 and 60 days in group II, the content of hypochromic cells did not change, and in group I it increased and exceeded that in group II by 2.5 times (p <0.001). As in the CA sectors2 and CA3, in the CA sector4 in the hippocampus of animals of group I, the content of hyperchromic non-wrinkled and wrinkled cells was higher than in group II.

The maximum decrease in the total number density of hippocampal neurons in piglets in group I was observed in the CA sector.one on the 21st day (28.3%), in the CA sector2 - on the 21st day (48.2%), CA3 - on the 45th day (52.5%) and CA4 - on the 90th day of the experiment (47.1%). Content of hyperchromic shriveled neurons in the CA sector one after 14 days of the experiment was 25.9%, in the CA sector2 - 54.8%, in the CA sector3 - 27.8% and in the CA sector4 - 17.3%. Maximum content of non-wrinkled hyperchromic neurons in the CA sectorone amounted to 57.0% on the 21st day, sector CA2 - 49.8% on the 45th day, sector CA3 - 58.2% on the 60th day and the CA sector4 - 36.5% on the 30th day.

B neuroprotective effect in the CA sectorone manifested itself by the end of the experiment (90 days) by preserving 68% of neurons, in the CA sector2 - 74.8% of neurons in the CA sector4 - 81.5% of neurons (p <0.05, p <0.05 and p < 0.025), in the CA sector3 53.0% (p <0.001).

Multivariate analysis shows that in experimental animals, biocorrection has a positive effect on cytoarchitectonics to varying degrees, but in all the studied sectors of the hippocampus. The greatest neuroprotective effect manifests itself in the CA sector3 (62.73%), CAone (55.7%), CA4 (53.8%) in terms of the total numerical density of neurons, and to the least extent in sector CA2. (37.0%). After 90 days of the experiment, the neuroprotective effect of bioresonance therapy is manifested by the persistence in the CA sector3 (29.98%), in sector CAone (26.62%,), in the CA sector4 (25.71%) and in the CA sector2 (17.68%) neurons.

The results of morphometric analysis indicate the existence of a statistically significant positive effect of biocorrection on cytoarchitectonics of all studied sectors of the hippocampus in various animal species. The neuroprotective effect of BRT is most pronounced in the CA1 sector and, to the least extent, in the CA sector.3. It is likely that the different responses of pyramidal neurons of the studied hippocampal sectors to BRT is explained by the peculiarities of their structural and functional organization.

Comparative multivariate analysis of the electron microscopic material of angio-, cyto- and synaptoarchitectonics in the hippocampus shows a pronounced neuroprotective and energy-adaptive effect of biocorrection, manifested in ultrastructural recovery and the appearance of large perforated synapses with a large number of large mitochondria in all studied sectors. Mitochondrial area of the CA sectorone increased by 4.2 times (p <0.005), the CA sector3 5.83 times (p <0.001), CA sector2 2.9 times (p < 0.001), CA sector4 4.5 times (p <0.001). The total number of mitochondria in the CA sector increasedone 3.84 times (p <0.005), CA sector3 2.93 times (p <

0.001), CA sector2 1.1 times, CA sector4 1.4 times (p <0.001).

When simulating stress on experimental animals, it was shown that the proposed method based on the use of BRT has a neuroprotective, bioenergetic, regenerative-reparative effect, being an etiopathogenetic, ecological-adaptive method.

biocorrection, promotes adaptations and rebuilding structurally functional changes not in the only the limbic structures of the brain, but everything organism as a whole.

Demonstrated for the first time ovano that, eliminating the dominant focus in hippocampus, the formation of pathological systems of the brain stress syndrome is prevented. The effect of biocorrection is accompanied by the preservation of the numerical density of neurons, a decrease in irreversibly damaged nerve cells in the limbic structures of the brain and the activation of synaptogenesis, which reduces the severity of dystrophic and necrobiotic changes in neurons, restores the threshold of convulsive readiness and the cognitive function of the brain of animals, contributing to the transition of dystrophic altered neurons into a normal, adapted structural and functional state.

From the literature review of the properties of the immune system and its interaction with the endocrine and central nervous system, it can be seen that each adaptive response to a stressor is accompanied by changes in both the immune status and cerebral energy processes. One of the main links that determine the interaction between cerebral energy metabolism and the immune system is the developing hypothalamic-pituitary adrenal insufficiency during stress, which in a certain way changes the cerebral energy metabolism and the characteristics of the immune system (Idova G.V., Cheydo M.A., 1997 ; Fokin F., Ponomareva N.V., 2003).

Using a systematic approach at the organismal level, the organs of the immune and endocrine systems of laboratory animals were investigated. There was a pronounced hypoplasia of the white pulp of white rats in the group without BRT and the presence of numerous neutrophils in the red pulp of rats. A significant decrease in the proportion of cortical substance on the sections of mesenteric lymph nodes, with an increase in the area of the medulla, expansion of the cerebral sinuses compared with the group with BRT, where no pronounced destructive morphological changes were detected.

The cytoarchitectonics of the adrenal cortex and medulla in the two studied groups of animals also revealed a positive dynamics of the structural-restoration processes between the groups with BRT and without BRT. In the group with BRT, the cortical substance and reticular zones are easily identified, since the configuration of the strands exactly corresponds to the control, the cells of the glomerular, fascicular and reticular zones are structurally preserved, the sizes correspond to the control. In the group without BRT, pronounced destruction of the cortex and medulla, intra- and intercellular edema, a decrease in the number density, area and deformation of cells of the studied areas.

Severe destruction of the adrenal glands under chronic stress under the influence of prolonged exposure to pathogenic factors leads to functional disorders not only of the endocrine system, but also of the reproductive function associated with ultrastructural disorders of steroid-secreting cells of both the adrenal glands and those similar in the parenchyma

testicles. Destructive processes in the testicles of the studied rats were more pronounced than in the adrenal glands, accompanied by total edema and defragmentation of the convoluted seminiferous tubules. Destruction of the spermatogenic epithelium, Sertoli cells, contributing to the disruption of the supporting, protective, metabolic for the spermatogenic epithelium and secreting functions.

Morphological differences in the groups indicate the positive effect of biocorrection in the elimination of the focus of excitation in the hippocampus, contributing to the reversibility of the processes of functional adaptation of the immune, endocrine and reproductive systems.

The use of biocorrection has a pronounced bioadaptogenic effect, leads to a decrease in the reactivity of the brain in response to electromagnetic stimulation (epileptiform seizures stop in 72.7%, motor arousal decreases in 45.4% of animals), normalizes protective-phobic reactions, restores structural

functional disorders of the immune and endocrine systems of experimental animals.

The use of our proposed technique in the clinic showed that out of 516 examined patients, 87% had post-stress changes in the hippocampus. Using the method of bioresonance diagnostics, it was revealed that the most common symptom complex is associated with the development of 64.8%. Using the proposed model of bioresonance diagnostics and therapy, 493 patients were treated, of which 73% had partial or complete positive effect.

An experiment on animals and clinical approbation of the proposed method prove the possibility of treatment and specific prevention of post-stress conditions by the proposed ecological-adaptive method of biocorrection,
based on bioresonance prenosological diagnostics and therapy, which adapts and restores the structural and functional state of not only the structure of the brain, but of the whole organism as a whole, preventing the formation of pathological systems of the brain during the development of stress syndrome.

Based on the results obtained, a concept is proposed
“Integrative, pacemaker role of the hippocampus in the formation of stress syndrome” under the influence of exogenous environmental factors, which allows to explain the variety of clinical manifestations of technogenic stress, to develop new methods of prenosological diagnostics, etiological and pathogenetic therapy, prevention of stress syndrome manifestations.

conclusions

Thus, according to our model, it is the limbic structure of the brain - the hippocampus, as an integrating structure, that unites by similarity all the variety of nosological manifestations of stress and, eliminating pathological foci of excitation in it, the development of stress syndrome and all its manifestations is prevented. The proposed method of ecological-adaptive biocorrection with the use of new innovative technologies BRD and BRT allows not only to carry out prenosological diagnostics, but also to assess the dynamics of the effectiveness of therapy, contributing to the preventive tactics of treatment and prevention of stress syndrome, determining the solution to the problems of energy-deficient states of the body at the systemic level and substantiating, from the position

evidence-based medicine, wider use of BRT.

Literature

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