

BALNEOTHERAPY AS CHOLELITHIASIS DEVELOPMENT PREVENTION IN DIABETES PATIENTS

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A high bile passages disease incidence, close anatomical and functional relation of the hepatobiliary system and pancreatic gland make the problem of biliary pathology clinical aspects study at diabetes (D) rather topical one.

In this connection the hepatobiliary system morphofunctional state estimation and "Metallurgist" sanatorium mineral water study have been of a certain scientific interest.

260 I and II D type patients with the concomitant biliary pathology confirmed by laboratory-instrumental methods of diagnostics were included into the examination. The obtained results of the carried out research testify that in 52% of the diabetes concomitant biliary pathology cases the chronic non-calculolitis cholecystitis (CNC) has been detected. It is important to note that cholelithiasis and cholecystectomy after condition made the rest considerable part (48%). In connection with this the study of the clinical picture of CNC taking course against diabetes is of great interest, as it is this very stage when the prevention of concrement formation in the biliary tract is possible. A greater value of this problem is found among the patients with II type diabetes, as it is among them CNC was registered in 59% of the cases.

For the purpose of cholelithiasis development prevention all the II type diabetes associated CNC patients were individually prescribed the "Metallurgist" sanatorium sulphate-chloride-sodium low-mineralized mineral water together with the traditional drug therapy. At the efficiency analysis of the carried out course mineral water treatment a great attention was paid to the dynamics of clinical presentations and laboratory-instrumental research methods data. A durable positive curative effect, which was achieved in shorter terms than in the patients having got the drug therapy only, is marked. At the duodenal drainage carrying out after the treatment the bile lithogenicity decrease, disappearance of inflammation signs in the bile passages are registered. The dynamic hepatobiliscintigraphy results showed that drinking spa treatment promotes the hepatocytes' absorbing-excretive function improvement. According to the dynamic echocholecystography data the evacuation function of the bile cyst improves authentically ($K_{\text{eff}} = 52,33 \pm 1,19\%$, $p < 0,01$) after the mineral water course treatment, and, as a consequence, the rest amount of bilis decreases ($V_k = 15,46 \pm 0,42 \text{ cm}^3$, $p < 0,01$).

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AGE-RELATED CHANGES IN THE STRUCTURE OF ADENOHYPOPHYSIS DURING EARLY POSTNATAL ONTOGENESIS

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The hypothalamo-pituitary-adrenocortical axis plays a vital role in adaptation of the organism to homeostatic challenge (J.P.Herman et al., 2003). During most of infancy, from approximately postnatal day 4 to 14, the rat displays a stress hyporesponsive period in the form of markedly attenuated adrenocorticotropin and corticosterone responses to environmental stressors that elicit pronounced elevation of ACTH and corticosterone in pre- and post-stress-hyporesponsive period rats (J.Lehman et al., 2002). After that the pituitary gland undergoes the prominent age-related adaptation changes. The different cell types in the anterior pituitary behave as dynamic populations, as the hypophysis maintains a continuous renewal of cells to ensure a balance between cell division, differentiation, growth arrest and apoptosis (L.Claudius et al., 2006). Numerous discrepancies in the evaluation of activation, hyporesponsiveness, facilitation and dissociation of the hypothalamo-pituitary-adrenocortical axis in the early age may be explained by a very limited information available in the literature on the age-related structural changes in the central link of the axis - adenohipophysis - during early postnatal development (C.Kaur et al., 2002; A.Armario et al., 2004; X.Belda et al., 2004; C.Marquez et al., 2005).

The objective of this study was to evaluate the developmental changes in the pituitary gland of the growing rats during early postnatal development using the modern methods of the quantitative immunohistochemistry.

Prewaning, weaning and early postweaning Sprague-Dawley rats aged 14, 21 and 30 days after birth (1st, 2nd and 3rd age groups accordingly) were weighed and sacrificed by cervical dislocation, their pituitary glands were removed, weighed, fixed in formalin and embedded in paraffin. Serial sections 4 mcm thick were stained with hematoxylin-eosin and immunohistochemically with monoclonal antibodies against ACTH and PCNA using streptavidin-biotin-peroxidase method with subsequent DAB-staining and image-analysis of the immunohistochemically stained slides. Image Pro Plus 4.5 software was utilized to evaluate the volume and numeric density of the immunoreactive cells.

The results obtained in the present investigation demonstrated that the pituitary gland mass in-

creased with age while the relative pituitary gland mass decreased from preweaning to postweaning age, with a difference reaching the level of significance between the 1st and the 3rd age groups ($p < 0,05$).

Routine histological staining demonstrated that in the pituitary gland of the growing rats adenohypophysis and neurohypophysis were clearly demarcated with a distinct subdivision of the adenohypophysis into pars distalis and pars intermedia. The pars distalis was dominated by the chromophobic cells which were distributed in clusters with their nuclei located very close to each other in the groups. Among the chromatophylic cells the share of the oxyphilic cells was higher compared to the basophilic adenocytes, the latter being increased by peripubertal age. Most of the oxyphilic cells were concentrated in the lateral wings of the adenohypophysis while the central part of pars distalis contained comparatively more basophils.

The immunohistochemical staining demonstrated that on the contrary to the hematoxylin-eosin, staining for ACTH revealed concentration of the immunopositive cells in the lateral wings of the hypophyseal anterior part and not in the basophilic center of the pars distalis, though it is known that corticotrophs are basophilic when stained by hematoxylin eosin. This allowed us to presume that the basophilic staining of the central part of the pars distalis in rats was due to the presence of the other types of basophils rather than corticotrophs, which might be either thyrotrophs or gonadotrophs.

The immunohistochemical staining for PCNA showed that share of the immunoreactive cells was small in all the three age groups and it appeared to decrease with age.

Image analysis demonstrated that the volume density of the ACTH- immunoreactive cells did not change during preweaning period, remaining almost at the same level, with its mild reduction by the beginning of the infant period of life ($p > 0,05$), while staining for PCNA showed significant decrease of the immunoreactive cells volume density ($p < 0,05$) in the peripubertal age. This finding may be explained by the increased rate of differentiation of the corticotrophs with age during early prenatal development which compensated the relatively reduced proliferative potential of the adenocytes.

The results obtained provide evidence that in prepubertal rats the population of the corticotrophs in the adenohypophysis undergoes dynamic changes which predetermine age-related modulation in the hypothalamo-hypophyseal-adrenal axis in rats during early postnatal development and promotes better understanding of its activation potential in the growing body of experimental animals.

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MYORELAXATION IN EXTREME CONDITIONS OF LIFE ACTIVITY

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Professional tendencies of the last years are connected with steady growth of loadings in practically all kinds of human professional activities. The consequence of this is often the disturbance in the work of regulatory mechanisms, that essentially decreases the level of physical capability and can result in various unfavorable vegetative shifts in health state [3, 6, 12], the problem of providing effective training of sportspersons in extreme conditions of life activity and creating functional preconditions for health saving being more and more topical. One of the ways to solve this problem is attracting modern effective and physiologically substantiated technologies with the simultaneous use of the functional state correction and complex diagnostics rational system. Such an approach allows widening the diapason of compensatory abilities of the body against the maximal volume and intensity of professional and psycho-emotional loadings. The provision of optimal adaptation to muscular loadings can appear one of the conditions for the health level maintenance and professional mastery quality increase [6, 10].

Certainly, the given problem acquires a special meaning in modern conditions of the human professional activity. It finds its reflection in a series of works connected with the idea of loading criticism both in sport and other areas of professional activity [7, 10].

Together with traditional approaches a great experience of using a whole range of non-traditional means (srednegorye, baro-chamber, hypoxic and hyper-pyretic effects, special breathing exercises, methods of biological feedback, methods of active self-adjustment and relaxation, etc.) within the system of sport training has been accumulated.

Together with that it is necessary to note that among the non-traditional means of effect on the functional state of the human body a careful attention has lately been paid to myorelaxation methods, which such features as action safety, relative easiness of effect achieving and not high financial expenditures are typical of. Relaxation, on some authors' opinion, is considered as an alternative or compliment to the functional state correction [1, 11, 16]. That is why it is often presented as a means of prophylaxis, correction and emotional stresses elimination, Thereat, as many note [13 and others], it is the leading one in the series of methods allowing achieving necessary changes in the body's functional state.

In physiology an active process of muscular tone and psycho-emotional tension decrease [8, 14]