

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.

The work is submitted to the International scientific conference "Modern science technology", Tenerife, Spain, November, 20-27, 2008, came to the editorial office on 22.08.2008.

MYORELAXATION IN EXTREME CONDITIONS OF LIFE ACTIVITY

Denisenko Yu.P., Vysochin Yu.V., Lukoyanov V.V.,
Yatsenko L.G.

*Kama State Academy of Physical Culture,
Sport and Tourism, Naberezhnyye Chelny
Saint Petersburg State University, Saint Petersburg*

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 sportpersons 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]

are meant by relaxation. At relaxation there appears a trophotropic state, the level of anxiety, psychological and physiological response to stress effects decreases. Besides, relaxation is attended by a considerable reduction of afferent and efferent impulsation. As a consequence we can speak on the fact that the introduction of relaxation methods aimed at the prophylaxis, correction and negative psycho-emotional states elimination into practice can promote adaptive capabilities of the body [6, 9, 15].

The relaxation methods have also found their application in the correction of a range of pathological states, hypertensive disease treatment, acute and chronic painful states taking down inclusive of sport activity [2, 4, 13].

The state of relaxation lies in the foundation of Meditative methods. Meditation and relaxation exercises have a wide diapason of application, most often they are used in transcendental medicine [17].

The value of muscles relaxation function in human sport and labour activities is difficult to overestimate. In a series of works [1, 6, 9 and others] a healthy influence of special exercises enhancing the function of skeletal muscles relaxation on the central nervous system, visceral organs' and systems' activities, rational blood circulation types formation, motion coordination, tempo, stamina, technical skills, special physical working capacity and sport results growth were proved.

The investigations proving the leading role of inhibitory systems of the central nervous system and skeletal muscles' arbitrary relaxation rate (ARR) in the most important manifestations of life activity of the whole body: in the mechanisms of timed and long-term adaptation to more physical, hypoxic and hyperpyretic loadings; in the mechanisms of heart adaptation and various blood circulation types formation; in the mechanisms of muscles blood supply and muscular activity energy supply; in the mechanisms of physical overwork stability improving, prevention of risks, traumas and diseases, and also in the body's mechanisms of defence from extreme conditions or factors and sportspersons rehabilitation [4, 5, 7, 13], are especially meaningful, in our opinion.

It should also be noted that all the most effective methods of psycho-regulation, self-adjustment and auto-training used in special psychological preparation of sportspersons and the latest health-improving technologies [8, 14, 15] are based on relaxation.

At the present time a number of various ways of sportspersons' special physical capability (SPC) based mainly on training and competitive loadings ramp up. They are effective enough to reach the main goal, but none of them provides sportspersons' health safety. Moreover, with the increase in volume and intensity of the loadings, which in sport have almost reached their limits, the sport traumatism and morbidity rate grow progressively. Proceeding from this, there was an evident necessity for the search of con-

ceptually new ways for a simultaneous solution of these two the most complex and, in the opinion of many research workers, almost incompatible problems – the problem of achieving the highest levels of special physical working capacity, and the problem of sportspersons' health maintenance and improving – associated by us into one general problem of human motor activity efficiency enhancement.

It should also be said here about the ARR highly authentic correlation relationships with all the principal components of motion coordination and sport results in various sports. The data for a significant influence of the ARR on the contractile muscles' properties realization degree also deserve attention. The enumerated facts, from our point of view, are meaningful enough to understand that important role, which is played by myorelaxation in the SPC growth in all kinds of sport activity and sportspersons' health maintenance.

References:

1. Aivazyan T.A. Relaxation therapy using biological feedback in treatment of hypertension patients // *Biomangement // Theory and practice* – Novosibirsk, 1988, pp. 133-141.
2. Bayevsky R.M., Motylyanskaya R.Ye. Cardiac rhythm in sportspersons – M.: P&S, 1986, p. 144.
3. Balsevich V.K. Human ontokinesiology – M.: Theory and practice of physical culture, 2000, p. 275.
4. Vysochin Yu.V. Relaxation skill // *Track and field athletics* – 1975, N10, pp. 26-27.
5. Vysochin Yu.V. Myorelaxation in mechanisms of orthopedic injuries // *Sport and Nation's health: Collection of scientific works*, SPb, 2001, pp. 74-84.
6. Vysochin Yu.V. Physiological mechanisms of defence, stability and physical working capacity improving in extreme conditions of sport and professional activity: Thesis of Dr. Sc. (Medicine) - L.: HMA named after S.M. Kirov, 1988, p. 550.
7. Vysochin Yu.V., Denisenko Yu.P. Modern ideas on physiological mechanisms of terminable adaptation of sportspersons' body to physical loadings effects // *Theory and practice of physical culture* – 2002, N7, pp. 2-6.
8. Vysochin Yu.V., Lukoyanov V.V. Active myorelaxation and self-adjustment in sport: Monograph – SPb.: SAPC named after P.F. Lesgaft, 1997, p. 85.
9. Denisenko Yu.P. Myorelaxation in football players' training system: Synopsis of thesis of Dr. Sc. (Biology) – M., 2007, p. 48.
10. Platonov V.N. Adaptation in sport – Kiev: Zdorovye, 1988, p. 257.
11. Sentyabrev N.N. Body's directed relaxation at intensive human muscular activity – Volgograd: VSAPC, 2004, p. 142.
12. Sudakov K.V. Main principles of functional systems' general theory // *Functional systems of the body: Guidance / under the editorship of Sudakov K.V.* – M.: Medicine, 1987, pp. 26-49.

13. Tkhorevsky V.I. Blood supply of skeletal muscles at static and dynamic work: Synopsis of thesis of Cand. Sc. (Medicine) – M., 1967, p. 24.

The work was submitted to international scientific conference «Prospects for the development of university science», Dagomys (Sochi), 20-23 September 2008, came to the editorial office on 13.08.2008.

CLINICAL MEANING OF RAPID GROWTH HYSTEROMYOMA, APPROACHES TO THE DIAGNOSTICS

Dikariova L.V., Shvarev E.G., Shvarev G.E.
Obstetrics and Gynecology Department of Astrakhan
State Medical Academy
Astrakhan, Russia

Introduction

Hysteromyoma is known as one of the leading points in the structure of gynecological morbidity rate in Russia; recently the growth of hysteromyoma incidence has been marked in women of reproductive age, as well as the tendency to the rejuvenation of sick women contingent [11, 18, 21]. The actuality of growing morbidity rate in women of reproductive age is considered because of preservation or restoration of reproductive function and in connection with frequent combination of hysteromyoma with pregnancy and hyperplastic processes of endometrium [10, 12, 24].

In modern literature two causes of rapidly growing hysteromyoma have been marked out: *true*, which is connected with activation of proliferative processes of myometrium, and *false*, which appears as a result of inflammation and edema of nodes [3, 11]. Thus, rapidly growing hysteromyoma demands the increased oncological suspicion because of the possibility of its combination with hyperplastic processes of endometrium, precancer and cancer of endometrium, ovary tumors and transformation to leiomyosarcoma [1, 16]. The performance of nonadequate operation in such cases significantly impairs the prognosis for a patient [1, 12, 16].

Timely and correct clinical assessment of various types of rapidly growing hysteromyoma often helps to specify the diagnosis and to determine the adequate treatment of such patients. That is why it is actual to search the criteria allowing to objectivize exactly the diagnosis of rapidly growing hysteromyoma in combination with endometrium pathology.

Methods of the investigation

For the achievements of the aim we have analyzed clinico-laboratory data of 978 women at the age of 24-56. The control group consisted of 268 (27,4%) patients without tumors of reproductive organs. All the rest were divided into two groups: the first one consisted of 478 (48,8%) patients with slowly growing hysteromyoma; the second group included 232 (23,7%) patients with rapidly growing hysteromyoma

(the increase of uterus sizes was as ≥ 4 weeks of pregnancy during a year).

All the patients had ultrasound examination of mammary glands and organs of pelvis minor (with transvaginal detector), along with traditional clinico-laboratory examination; according to showings some of them had mammography, cytologic examination of material from ecto- and endocervix, aspirate from the uterus cavity and hysteroscopy.

In addition to the listed above methods we worked out and used the specifying method of diagnostics of rapidly growing hysteromyoma. This method is based on the comparative estimating of uterus volume and making structural analysis of endometrial washes or menstrual discharges which flow from the organ with tumor.

The estimating in these biological fluids the final and interstitial products of peroxide lipid oxidation (malon dialdehyde in particular, which has the property of cellular toxin) reflected the level of free radical processes. The detection of malon dialdehyde was carrying out according to the technique of J.A.Stroev and J.G.Makarov (1986).

Recently the method of structural analysis (wedge-shaped dehydration) of biological fluids has been widely spread in clinical medicine; it is based on the extraction of information of overmolecular level in phase of transformation of biological fluid into solid condition [14, 19, 20].

For carrying out the morphostructural analysis 0,2 ml of supernatant of endometrial wash or menstrual discharge was put on the glass. The drop was dried at room temperature, at relative air humidity 60-70% and at minimal mobility of air during 18-24 hours. The studying of structure forming elements of the dehydrated drop (facii) and their photographs was carried out with magnifying from x10 till x160, with stereomicroscope Mz-12 (Leica) and colour digital camera "Pixera" (USA). Morphometrical showings of facii of endometrial wash were assessed with the programme Image Tool.

The size of uterus with hysteromyoma is one of the basic parameters in diagnostics and treatment. Its assessment according to weeks of pregnancy in the process of dispensary observation can be understood by physicians rather subjectively, this makes difficult to diagnose rapidly growing hysteromyoma.

For the objectification of uterus size and rate of growth of hysteromyoma the ultrasound showings were undergone the mathematical processing with the formula offered by A.N. Strizhakov et al.(2000) and J.M. Vikhliajeva (2004). The formula of drawn out ellipsoid was taken as a basis of calculation of uterus volume:

$V_0=5236 \cdot A \cdot B \cdot C$; A – the length of the uterus, B- its anteroposterior size, C – its width.

Because of hysteromyoma nodes the calculation of uterus volume was carried out according to the modified formula (the volume of separate hystero-