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Physical rehabilitation of congenital heart disease as a social problem

Abstract. Purpose: to attract the attention to the problem of physical rehabilitation of congenital heart diseases. **Material and Methods:** analyzed the domestic and foreign scientific and methodological literature on the problems of the physical rehabilitation of congenital heart disease. **Results:** in the domestic literature lacks modern works on the subject. Foreign literature sources indicate the positive impact of the programs of physical rehabilitation on exercise tolerance, health and quality of life of patients with heart defects. To develop recommendations on physical activity for persons with congenital heart disease. **Conclusions:** the development of cardiac surgery requires simultaneous progress in the development of programs and guidelines for physical rehabilitation.

Keywords: heart defect, physical rehabilitation, physical exercise.

Introduction. In the second half of the twentieth century the optimization of surgical methods of a treatment led to a noticeable increase in a duration of life of patients with congenital heart diseases (CHD). At present the lethality at a surgical correction of CHD makes less than 5%, therefore, it is possible to expect that the prevalence of CHD will make 1 on 150 adults of young age the next decade [2].

In recent years means of physical rehabilitation began to be applied widely in the complex treatment of patients with cardiovascular diseases, after heart operations, however literary data of rather physical rehabilitation, physical activity or physical activities aren't enough at different congenital heart diseases by separate techniques for the present.

Communication of the research with scientific programs, plans, subjects. The work performed according to "The Built plan of the RW in the sphere of physical culture and sport on 2011–2015" by a subject 4.4. "Improvements of organizational and methodical bases of programming of the process of physical rehabilitation at dysfunctional violations in different systems of a human body". Number of the state registration is 0111U001737.

The objective of the research: to consider and draw attention to a problem of physical rehabilitation at congenital heart diseases.

Material and methods of the research: scientifically methodical literature on problems of physical rehabilitation at congenital heart diseases is analyzed.

Results of the research and their discussion. Physical activity is closely connected with a concept of quality of life, social interconnections. Children with CHD often limited in the physical activity for many reasons: the decrease in functionality of heart, the general physical underdevelopment in connection with a considerable restriction of physical activity, the accompanying pathology; wrong assessment of the importance of physical activity, fear. The clinical symptomatology is a "barrier" for physically active lifestyle only in 30% of cases. Since early teenage age, patients with CHD have to receive information, adequate for the state, on need and dispensing of physical activities and trainings. Dispensing of the physical activity and control of a condition of an organism during physical activities have to answer recommendations of the leading centers which work on the profile "cardiovascular surgery" [1].

Prospects of application of means of physical rehabilitation of patients after heart operation and vessels are based on the correction of CHD that lead to the elimination of causes of infringement of blood circulation in most cases. But a question concerning a duration of the postoperative term which has to pass, for possibility of application of means of physical rehabilitation, namely physical exercises, and their dispensing, and a form at different defects of heart, isn't displayed in full in domestic literature.

Even O. I. Yankelevich, who developed a technique of application of physical exercises at CHD, offered to organize a polyclinic and dispensary supervision over all patients with congenital heart diseases and big vessels, involving them in classes with remedial gymnastics in offices of physiotherapy exercises of policlinics with necessary medical control and to pay more attention of the organization at schools of "special" groups of physical training, considering that children have to go to these groups for classes by physical exercises in 1-2 years after a surgical correction of defect, as a rule [3].

The experience of O. I. Yankelevich of a rather active inclusion of procedures of remedial gymnastics at all stages of a surgical treatment of patients with congenital heart diseases testifies to its big treatment and prophylactic efficiency. So, remedial gymnastics has the all-toning impact, expands functionality of patients and improves their physical state in the preoperative period. The consecutive realization of the basic methodical principles of carrying out remedial gymnastics in the next postoperative period facilitated the adaptation of an organism to new haemo-dynamic conditions and consequences of a postoperative trauma. It is noted that there aren't almost absolute contraindications to a purpose of remedial gymnastics, even it is recommended to study a "static" breath, an expectoration and some physical exercises for heavy patients. Also the efficiency of classes with remedial gymnastics after an extract was confirmed that was in the additional improvement of all functional indicators (a test with physical activity, a breath delay, an indicator of vital capacity of lungs, minute volume of breath, oxygen consumption coefficient, and etc. [3].

Researches of other authors which were connected with physical rehabilitation at congenital heart diseases at a stationary stage, were less large-scale.

Foreign researchers point to the importance and need of the long program of the complex rehabilitation of persons with congenital heart diseases.

So, N. Dedieu together with coauthors [6] developed the program for rehabilitation of patients after 1–2 months from the moment of a surgical correction of CHD. At the beginning of the program all patients executed the test with physical activity for measurement of the maximum heart rate, time of implementation of the test, calculation of the intensity of work,

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in metabolic equivalents. The first stage of the program consisted of relaxation exercises. During the second stage patients began classes after several minutes of relaxation exercises and continued them to the subsequent aerobic trainings in the heart block of rehabilitation 2 days for a week within about 2 months. The versatile team, including nurses, experts on rehabilitation and psychologists were ready to give help at any time. The last stage consisted of physical exercises that patients carried out at home. Patients used Borg's scale which is based on feelings of a person during physical activity, including the increase in heart rate, breath or the increased breath frequency, the raised perspiration, and muscle fatigue for the determination of physical intensity. Though it is a subjective indicator, but a degree of tension can provide a rather good mark of the actual heart rate during physical activity. As a result the program promoted the improvement of functionality of patients that provides arguments for an inclusion of physical rehabilitation in a recovery treatment of patients with congenital heart diseases. Besides, the lack of side effects and improvement of quality of life of these patients are noted by a reduction of psychosocial barriers for physical activity.

The influence of programs of rehabilitation, lasting 2-3 months, on the maximum consumption of oxygen, fitness of patients with CHD was presented in the researches of I. C. Balfour [4], L. M. Bradley [5] and their coauthors.

Other researchers reported that the 6-week home program of rehabilitation with use of stationary exercise bicycle improved the maximum power and working capacity, but didn't affect the maximum consumption of oxygen [7]. Similar results are received and after passing of the 9-week program based on the run by a jog trot and walking, namely, the increase in time of run at endurance is revealed and the improvement of the maximum consumption of oxygen is noted [11].

Also the developing of a selection criteria to programs of rehabilitation is necessary, especially different groups of defects of heart and a condition of correction of defect are observed in group of patients. So, J. Rhodes and his coauthors [10] at selection to the program of cardiorehabilitation of children with the heavy CHD paid attention to the existence of arrhythmias that don't give corrections by means of a kardiodefibrillator; ventricular dysfunction; pulmonary hypertension; inflammatory diseases of heart; heart failure; saturation at rest; on a peak sistolichny gradient on the aortal valve. Besides, children who had arrhythmias, ST segment depression, hypertension, hypotonia, cardiac pain in breast were excluded from the research during testing with physical activity. Similar criteria are given also other works [6].

Many foreign researches are directed on the development of recommendations on physical activity and concerning an opportunity to take part in sport.

The American Association of Heart recognizes the importance of physically active lifestyle in health and wellbeing of children and adults with congenital heart diseases. It is noted that consultations of patients with congenital heart diseases have to emphasize the importance of daily physical activity and gradual reduction of manifestations of an inactive way of life as required for the improvement of a clinical condition of a patient. The attention is paid that the advantage for health of physical activity appears during a performance of physical activity of the moderate intensity which is within a reach almost at all patients with CHD even if there are no changes in tolerance to physical activities and development of the musculoskeletal device, though the highest level of intensity is necessary for changes of a condition of the cardiorespiratory system or the musculoskeletal device [9].

The research is interesting that was carried out in 2002 by R. J. P. Lewin and his coauthors, concerning the development and rendering of services on rehabilitation of children and teenagers with congenital heart troubles among the centers of children's cardiology in Great Britain. The post questioning of 17 centers of children's cardiology was carried out for this purpose. The relation of the personnel to rehabilitation and current level of its security were researched. Most of respondents (82%) considered that they have to provide rehabilitation of the patients, but only one center had the program of rehabilitation. The level of financing and the big geographical territory of dwelling of patients are admitted by the main obstacles in a way of ensuring rehabilitation [8]. It is possible to provide something a similar situation and in our country which confirms the need of the development of the raised question.

Conclusions. The development of cardiac operations demands the simultaneous progress in the development of programs and methodical recommendations on physical rehabilitation in different postoperative terms for more wide range of defects, educational programs, for parents and children, and adults with CHD.

Prospects of the subsequent researches consist in the development of evidence-based programs of physical rehabilitation and recommendations on physical activity for persons of different age and with different congenital heart diseases.

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