ПОД- СЕКЦИЯ 7. Клиническая медицина.

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ATHLETIC HEART

Actuality. Sport has become considerably social important nowadays and the level of physical load has increased provoking unfavourable cases connected with the breaking of heart structure and it's function. Professional sportsmen very often don't suspect having any illness of the heart and feeling themselves fully healthy, some cases of sudden death can take place. That's why the problem of studying "athletic heart" is too actual, especially it concerns children who have dystrophic changes in the myocardium which start developing in the earlier age and demand careful observation.

The aim of the work is to analyse pathological changes in the myocardium connected with physical strain which are characteristic for young sportsmen who go in for different kinds of sport.

Objectives: 1.To examine changes revealed on the ECG of sportsmen who go in for different sports depend on a dynamic or a static component of physical load. 2.to examine changes revealed on the ECG of sportsmen in different age groups. 3.to find out what kinds of sport cause the most significant changes in the myocardium of young sportsmen.

Regular sport trainings form specific changes of cardiovascular system called "athletic heart". It is more able-boded than an usual one and supplies punctually the body with blood. As a result of excessive trainings it often undergoes changes which decrease its working capacity and pathological "athletic heart" develops. Under the term of "pathological athletic heart" all heart illnesses are ment, arised under the influence of physical overload. Having chronic physical heart exertion myocardial dystrophy of physical overstrain can be formed [1]. According to the data of ECG 3 degrees of myocardial dystrophy of physical overstrain are distinguished. In the first degree condensation of the T wave in the allotings from limbs and V4-V6, positive U waves occur. For the second degree two phased T waves in the majority of allotings and the dislocation of segment ST downwards are characteristic. In the third degree full inversion of the T wave and the dislocation of segment ST downwards take place[1].

Various kinds of sport influence differently on forming specific changes in the myocardium and some form myocardial dystrophy of physical overstrain quicker, others slower. All kinds of physical activities are divided into dynamic and static. With dynamic exertions the increase of cardiac output, heart rate, stroke volume, systolic blood pressure and decrease of diastolic blood pressure, the considerable decrease of peripheral resistance take place (increased preload). In this case more often the eccentric hypertrophy of myocardium develops. Static exertions lead to visible increase of systolic, diastolic and average blood pressure (increased afterload) and concentric hypertrophy of myocardium develops. The majority of sports contain two components[2].

Materials and methods. During the research conducted on the base of the Republican centre of sport medicine electrocardiograms of 700 children were studied in 2 age groups: the first group – sportsmen of the age of 12-14 (350 teenages), the second group

– sportsmen of 15-17 (350 adolescents), doing different sports.

All sports are united according to the domination of a static or a dynamic component in 4 groups: 1) with high static (HS) and low dynamic (LD) components (heavy athletics, gymnastics, martial arts); 2) with high dynamic (HD) and low static (LS) components (football, long-distance running, tennis, ski racing); 3)with high static (HS) and high dynamic (HD) components (boxing, cycling, rowing and canoeing). In these categories in each age group 100 electrocardiograms were studied. For kinds of sport with low static (LS) and low dynamic (LD) components (shooting and table tennis) 50 were studied electrocardiograms in each age group.

Results and discussion. In general myocardial dystrophy of physical overstrain was revealed in 46 sportsmen (6,57%), in the first degree in 1,7 times more often than in the second. And in the senior age group of 15-17 changes occurred 2 times more often (31 people – 8,86%) than in the junior age group (15 people – 4,28%).

In the junior age group myocardial dystrophy of physical overstrain of the first degree, specific for the initial damage of myocardium, was found out 2 times more often than of the second degree (10 people – 2,86% and 5 people – 1,43% accordingly). In the senior age group the part of the second degree increased and the correlation between the first and second degrees was 1,5 (19 people – 5,43% and 12 people- 3,43% accordingly). It should be mentioned that the cases of the third degree were not revealed as sportsmen were discharged from the trainings when the first symptoms of the dystrophy occurred.

In accordance to the domination of a dynamic or static component of physical load the results were distributed in the following way: myocardial dystrophy of physical overstrain was met more often while doing sports with high static and low dynamic components: heavy athletics, gymnastics, martial arts. In general it was revealed in 11% sportsmen (in 7% of junior and 15% senior age groups), moreover the first degree was found out in 2,5 times more often than the second degree in the junior group (5% the first and 2% the second degrees) and in 1,5 times more often in the senior group (9% and 6% correspondently).

Sports with high static and high dynamic components rank the second position by occurrence of myocardial dystrophy of physical overstrain (boxing, cycling, rowing and canoeing). It was revealed in 7,5% cases, in general in 5% of the junior age group and in 10% of the senior age group, the first degree was observed 1,5 times more often than the second in both age groups (3% and 2% in the junior, 6% and 4% in the senior accordingly).

Furthermore sports with high dynamic and low static components follow (football, long-distance running, tennis, ski racing). On the whole it was revealed in 4% and the first degree took place 2 times more often than the second in the junior group (2% and 1%) and in 1,5 times more often in the senior group (3% and 2%). Myocardial dystrophy of physical overstrain was not registered in the junior age group, sportsmen of which go in for sport with low dynamic and low static components. In the senior age group it was marked only in one sportsman and being in the first degree.

Conclusions: 1.Myocardial dystrophy of physical overstrain in the senior age group sportsmen took place 2 times more often than in the junior age group.

2.The first degree of myocardial dystrophy of physical overstrain in junior sportsmen occurred 2 times more often than the second, in senior sportsmen – in 1,5 times, what characterizes more marked changes in the myocardium of senior children who do sports for a more long time.

3.Changes on the electrocardiogram peculiar for pathologic athletic heart most often occurred in sportsmen who go in for sport with high static and low dynamic components of physical load.
4.The most marked changes - the second degree of myocardial dystrophy of physical overstrain dominate in this category of sportsmen as well.
5.Minimal changes are revealed in sportsmen who go in for sport with low dynamic and low static components.
6.Young sportsmen of 15-17 years old doing sports with high static and low dynamic components need a more careful doctor's control.

Literature:

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