

The adhesion on the macrophages surface and penetration with reproduction in this cells of enterovirus from virus-included liquid was determined by virological and morphological methods. The type of macrophages infection belongs to isolated system, because the activity of EV genome and reproduction of viruses were in cell cytoplasm. The present in macrophages of the product acute fatal infection were conducted by appearance in process of the reproductions full-function virus ECHO 11 with expressed cytopathic action on swine embryo kidney cells culture, also the formation of virus-specific and virus-induction organelles in cytoplasm toxically and mechanically caused cells destruction.

According to recent literature distinguishes 6 types of viruses to cells [3]: macropinocytosis, three types of endocytosis, with the formation of caveolae and similar last mechanism dependent on dynamin. The method used in this study allowed us to reveal tree difference routs of virus family *Picornoviridae* enter into macrophage, exclusive of macropinocytosis. Herewith the specific route of macrophages plasma membrane penetration was determined for each genus of its viruses.

ECHO11 virus and was able to traverse the lipid bilayer surrounding the macrophage, without killing the cell. Herewith EV penetrated inside of cell and disassembled itself in such. In result its genetic information and any associated enzymes remained intact and the viral RNA and associated enzymes were directed to the appropriate cellular compartment. Consequently, in the absence of denominated destructive changes mononuclear phagocytes can act as the long source of virus and take certain part in process of ECHO11 virus dissemination in enterovirus infection.

Thus enteroviruses resists to monocytes/macrophages influence and capable to intracellular reproductions in them, overcoming, thereby, biological barrier, protecting from infection high-sensitivity cells of the central nervous system and parenchymatous organs and preventing spreading the agents from primary foci of infections.

Acknowledgment: This investigation was supported by a grant (16.740.11.0182) from The Ministry of Education and sciences Russian Federation.

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The work is submitted to the International Scientific Conference «Homeostasis and the infectious process», Egypt (Hurghada), 20-27 February 2012, came to the editorial office on 13.01.2012.

SEASONAL ALTERATIONS IN LYMPHOCYTE PHENOTYPE AMONG STUDENTS-SPORTSMEN WITH DIFFERENT LEVEL OF TRAINING IN DEPENDENCE ON SEX

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A condition of immune system is significantly affected by a number of indicators of a man's organism's reactivity, including sex and various factors of environment, including physical strain, their level, and season. However, no committed and systematic works in this direction have been carried out among students-sportsmen. Therefore, lymphocyte link of immunity has been studied among students-sportsmen depending on their level of training, sex, and season.

Lymphocyte phenotype (subpopulation of lymphocytes CD3, CD4, CD8, CD19) has been studied via indirect immune-fluorescent method among 22 students-sportsmen who take sambo wrestling in novice group, 23 students who follow master programme, 18 female students who take basketball section following master programme, and 18 female students who take fitness-aerobics in a novice group. Blood for research has been taken in winter, summer, and autumn. The results have been processed via common methods of statistic analysis.

It has been found that, as a rule, a content of lymphocyte subpopulation among students-sportsmen did not depend on level of their sport qualification and sex. The exclusion was formed by male master students-sportsmen who showed higher numbers of lymphocytes CD3, CD4, CD19 than those among female novice sportsmen. The analysis of lymphocyte phenotype alterations among students-sportsmen of different qualification depending on season regarding sex showed us a reliable prevalence of number of CD3-lymphocytes among sambo masters in autumn, winter, and spring compared to the same indicators of novice sportsmen while no differences were registered between male groups according to cells CD4, CD8, CD19. The highest content of CD3-lymphocytes among novice sambo wrestlers was registered in autumn with the following reliable decrease in winter and especially spring; in summer the number of cells increased, however, it did not reach its initial autumn level. Similar data was received while studying the masters group, and it was supplemented by reliably

higher indicators of CD3-lymphocytes in winter, compared to spring and autumn ($p < 0,05$). The number of CD4 cells suffered seasonal alteration similar to CD3 cells in both groups of male sportsmen. No reliable seasonal alteration in number of CD8-lymphocytes among the sportsmen of both groups. The content of CD19 lymphocytes among novice sportsmen as well as among masters was reliably higher in autumn and decreased in winter and especially spring; a significant difference in higher autumn indexes compared to winter, autumn – to spring, autumn – to summer, winter – to spring. Lymphocyte phenotype among female sportsmen looked differently. Among basketball players of high qualification, compared to women who took fitness-aerobics a reliable increase in CD3-lymphocyte content was registered only in autumn, and CD19 – in autumn and winter. No difference was observed in content of CD4 and CD8 cells between both groups of women in different seasons of year. Among women novice the number of CD3 cells was significantly higher in autumn than in winter; other seasonal differences were unreliable in this group. Among basketball players of high qualification seasonal differences in content of CD3 lymphocytes were more expressed – their highest content was registered in autumn and winter with further reliable decrease in spring and staying at the same level

in summer. A reliable difference in higher number of CD3 cells was registered in this group in autumn compared to spring, autumn – to summer, winter – to spring, winter – to summer ($p < 0,05$). Seasonal comparisons of indicators of cellular lymphocyte immunity in both women groups according to the data of CD4, CD8, CD19 cells did not show any statistically reliable differences. Statistical analysis in dependence on sex testified for reliably higher contents of CD3, CD4, CD8 –lymphocytes among male novice sportsmen and masters, compared to the same data of women groups that take novice fitness-aerobics classes and basketball as masters.

Thus, among students-sportsmen (both men and women), the most sensible to seasonal alterations is the index of content of CD3-lymphocytes. Their lowest number in spring defines the correction among students-sportsmen of both sexes and, first of all, novices, during the spring-summer period. The described alterations in their immune system should also be considered while carrying out training process among students-sportsmen with different level of sports training considering their sex.

The work is submitted to the International Scientific Conference «Innovative Medical Technologies», Russia (Moscow), 27-29 February 2012, came to the editorial office on 18.01.2012.