Cytokine Status in Game Sports Athletes with Cardiomyopathy of Overstrain

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Introduction

The regular intensive physical psycho-emotional loads are characteristic for modern sport. They lead to organism’s changes that affect most organs, systems and biochemical processes. The cardiovascular system is most affected [1,2]. Imbalance in cytokine status have a significant role in pathological changes in cardiovascular system. Pro-inflammatory cytokines are markers not only of risk of atherosclerosis, but also indicators of overstrain of heart during the inadequate physical loads [3,4].

Results

Comparing athletes without cardiovascular pathology and sportsmen with process of repolarization disruption (PRD) of 2-3 stages it is revealed that level of pro-inflammatory IL-1β and IL-8 is higher in the last ones (52,1 ± 14,0 and 16,6 ± 2,5 pg/ml against 296,3 ± 111,1 and 110,8 ± 33,0 pg/ml at р<0,05 - 0,01). The lowest level of anti-inflammatory IL-4 is also registered in athletes with PRD (2,0 ± 1,0 against 7,1 ± 2,3 pg/ml at р<0,05).

All defined interleukins, including IL-8 (in the united group it was isolated), in sportsmen with electrocardiographic signs of cardiomyopathy of overstrain (PRD and rhythm disturbance) are linked by positive correlation (r from 0,58 to 0,98). TNF-α, IL-1β, IL-4 have also a positive correlation (r from 0,42 to 0,61) with CPK-MB what indicates not only a connection TNF-α and IL-β with destruction of the cardiomyocytes, but also compensatory rising of anti-inflammatory IL-4. The most significant correlation is revealed between TNF-α and CPK-MB (r = 0,61). It confirms opinion about role of TNF-α in progress of myocardial dysfunction [5,6].

Conclusion

In research it is found that athletes with signs of myocardial dystrophy regarding sportsmen without cardiovascular pathology have a high level of IL-1β and IL-8. Substantial correlation (r = 0,61) between TNF-α and CPK-MB in athletes with myocardial dystrophy of overstrain confirms the role of TNF-α in progress of myocardial dysfunction. The most severe problems are found in sportsmen with myocardial dystrophy of overstrain are detected on ECG (PRD of 2-3 stages).

References


