



Exercise Biochemistry Review

Proceedings of IBEC 2018, Beijing, China, October 23-25
PO-241

Effects of Aerobic Exercise on Activation of Neuroglia Cell and Expression of Inflammatory Factors in Aging Rats

Yaya Xiong¹, Jia Jia², Xuanming Hao¹
1. South China Normal University
2. Guangzhou Shui Yin Road Primary School

Objective In recent years, aerobic exercise has been considered as a method of anti-aging. The aging mechanism in nervous system is closely related to increased activation of neuroglia cells and progressing neuroinflammation with aging. This study tried to shed some light on relationship between chronic inflammation accumulation and aerobic exercise so as to understand how exercise intervened nervous aging through inflammation. In this study, we used D- galactose aging models, applying two intervention ways: aerobic exercise during aging process, after that, to explore the changes of astrocytes, microglia and TNF- α expression. This study aims to provide certain evidence that sport plays a role in anti-aging.

Methods Fifty male Sprague-Dawley rats at age of eight weeks, are randomly divided into five groups: control group(A), Aging group(S), Aging while exercising group(YS), After aging Quiet group(SA), After aging exercise group(SY). The aging groups were subcutaneously injected with D-galactose 150mg / kg / d for six weeks. Group YS do swimming exercise three times a week, once 60 minutes in the first six weeks. SY had same exercise intervention in the 7-12 week after injection. We took the hippocampus of rats in A, S, YS at the end of the sixth week, and of those in SA, SY at the end of twelfth week. tested the expression of GFAP, CD11b and TNF- α by immunohistochemical staining.

Results 1. GFAP immunohistochemistry: Compared with group A, The expression of GFAP in group S, YS, SA and SY was significantly increased ($P < 0.01$). Compared with group S, The expression of GFAP in group YS significantly decreased by 20.5% ($P < 0.01$). There is no significant difference between group SA and SY ($P > 0.05$).

2. CD11b immunohistochemistry: Compared with group A, The expression of CD11b in group S, YS, SA and SY was significantly increased ($P < 0.01$). Compared with group S, The expression of CD11b in group YS decreased by 18.4% ($P < 0.05$). There is no significant difference between group SA and SY ($P > 0.05$).

3. TNF- α Immunohistochemistry: Compared with group A, The expression of TNF- α in group S, YS, SA and SY was significantly increased ($P < 0.01$). Compared with group S, The expression of TNF- α in group YS decreased by 30.1% ($P < 0.01$). There is no significant difference between group SA and SY ($P > 0.05$).

Conclusions Exercise could effectively delay aging progression through improving neuroinflammation, but hard to reverse it, so the earlier in age to exercise, the better to delay aging.