

High blood levels of IL-6 nicely correlate with animal survival in trained C26 bearing mice

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Exercise is a beneficial adjunct therapy to maintain or enhance quality of life in cancer patients. Recently, few studies demonstrated a correlation between high concentrations of IL-6 and a poor survival. This depends on the equilibrium between the concentrations of IL-6 and sIL-6R. Exercise induces a beneficial increase in circulating IL-6 (1).

Fresh fragments of solid C26 tumor were inoculated in healthy 3 months-old mice (n=230, M=115 and F=115). The experimental procedure were 12 weeks long. During the first 6 weeks, mice were randomly assigned to one of the experimental conditions: sedentary (SED) or progressive training (TR_p). After the first 6 weeks, all mice were inoculated with a fresh fragment of tumor. All trained adult mice after the tumor inoculation were randomly assigned to a different training program: low intensity training (TR_L), moderate intensity training (TR_M) and high intensity training (TR_H). Mice run 5 days per week on a Rota-Rod following one of the specific training program (TR_p, TR_L, TR_M and TR_H) (2). After tumor inoculation the mice were daily weighted and tumor size monitored until death. Moreover, 8 mice for each group were sacrificed when cachexia occurred (>9% body weight loss), and blood samples were stored for CBA Enhanced flex set flow-cytometric assays (IL-6 and TNF-alpha).

The TR_M and TR_H training protocol performed by trained adult male mice extend the median survival compared to the sedentary adult mice and trained female mice. Interesting the beneficial effect of exercise seemed to be mediated extending the survival days. Significant high blood levels of IL-6 were recorded among the male trained mice (TR_M and TR_H) groups in comparison with sedentary adult mice and trained female mice (TR_M and TR_H).

The results suggest that endurance exercise as adjuvant therapy is gender and physical training level specific. This effect seems to be mediated by IL-6 blood levels.

This work was funded by PRIN2009 - Prof. G. Zummo and PRIN2012 - Prof. Farina F.

References

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Keywords

Cachexia; endurance exercise; survival; interleukin-6.