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Effect of 8 weeks aerobic combined with resistance exercise on hepatic glycolipid metabolism induced by high fat diet in mice

Jing Xiao
shanghai university of sport

Objective C57 mice were fed with high-fat diet. After the pathological features were detected, a group of C57 high-fat diet mice were randomly selected for eight weeks aerobic and anti-resistance exercise. To observe the effect of exercise on liver glucose and lipid metabolism in mice fed with high fat. To explore the effect of exercise on liver glucose and lipid metabolism disorder caused by high fat feeding, to provide the direction and evidence for the treatment and rehabilitation of fatty liver and other diseases caused by high fat diet.
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Methods 30 male C57 mice were 8 weeks old, with an average weight of 20.02 ±0.06 g. The purchased mice were randomly divided into C57 diet group (n = 10) and high-fat diet group (n = 20). A pathological model of hepatic glycolipid metabolism disorder was established by high-fat feed feeding. The success of the model was measured by calculating the area under the blood glucose curve. After modeling, the C57 mice were randomly divided into high fat group and high fat exercise group, with 10 mice in each group. The mice in high fat exercise group were trained 6 days a week for 8 weeks. At the end of the exercise, the three groups were uniformly selected.
Results 1. Compared with the normal diet quiet group, there was a significant difference in the area under the blood glucose curve in the high-fat diet quiet group ($p < 0.01$). Compared with the quiet high-fat diet group, there was a significant difference in the area under the blood glucose curve after intraperitoneal injection of glucose in the high-fat diet exercise group ($p < 0.05$).
2. After two weeks of high fat diet feeding, the body weight of the quiet group was significantly higher than that of the quiet group fed with normal diet ($p < 0.05$). After two weeks exercise training of high-fat mice, the body weight of high-fat exercise group was significantly lower than that of quiet high-fat mice ($p < 0.05$). Compared with the normal diet group, the liver weight and liver weight of the high-fat quiet group increased ($p < 0$ 01), while the liver weight and liver / body weight of the high-fat exercise group were lower than those of the high-fat quiet group ($p < 0$ 05).
3. The liver AST (aspartate amino transferase) and ALT(Alanine transferase) in the High-fat diet quiet group were significantly higher than those in the normal diet quiet group ($p < 0.01$). The ALT (alanine transferase) in high-fat diet exercise group was lower than that in quiet high-fat diet group ($p < 0.05$).
Conclusions 16-week high-fat diet can establish a pathological model of hepatic glycolipid metabolism disorder. Hyper-insulinemia, hyper-lipidemia and other pathological phenomena will occur in mice. 8 weeks aerobic combined with anti-exercise intervention can improve hepatic glycolipid metabolism disorder and liver function.