两种运动康复方案对冠心病患者炎症因子及黏附分子的影响研究

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摘要：目的：本研究旨在探讨 12 周太极心康方案和常规运动康复方案对冠心病患者炎症因子及黏附分子的影响。**方法**：（1）受试者招募：在北京朝阳区安贞社区服务中心、山东淄博万杰康复医院共同招募受试者。于 2020 年 10 月至 2021 年 11 月共计招募 46 名冠心病患者, 年龄为 62.96 ± 9.296 岁, 其中男性 32 名, 女性 14 名, 按 1:1 比例随机分为实验组 (n=23) 和对照组（n=23）。最终完成整个试验的患者为 34 例，试验组 14 例，对照组 20 例。（2）干预方案：采用太极心康方案干预实验组，采用常规运动康复方案干预对照组。每周干预 3 次，每次 60min，共计干预 12 周，其中包括 4 周医院院内康复和 8 周远程线上的居家康复。（3）测试指标：在干预前后检测炎症因子和黏附分子。**结果**：12 周干预后，两组 C-反应蛋白（CRP）、白介素-6（IL-6）、血管细胞黏附分子（VCAM-1）、细胞间黏附分子（ICAM-1）较干预前均显著下降（$P < 0.01$）；太极心康方案组抗炎因子白介素-10（IL-10）较干预前显著上升（$P < 0.01$）。干预前两组组间比较各指标均无显著性差异（$P > 0.05$），干预后太极心康方案组 VCAM-1 显著低于常规运动康复方案组（$P < 0.05$）。**结论**：12 周太极心康方案和常规运动康复方案干预，均能有效降低冠心病患者促炎因子 CRP、IL-6 水平和黏附分子 ICAM-1、VCAM-1 水平。与常规运动康复方案相比, 太极心康方案可有效提高抗炎因子 IL-10 水平，显著减少黏附分子 VCAM-1 的表达，对调控冠心病患者机体促炎与抗炎平衡，改善机体抗黏附能力具有更积极的作用。建议未来在心脏康复领域进一步应用和推广太极心康方案。

关键词：太极心康方案，常规运动康复方案，冠心病，促炎因子，抗炎因子，黏附分子

Effects of two kinds of exercise rehabilitation programs on inflammatory factors and adhesion molecules in patients with coronary artery disease

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Abstract: O**bjective**: The effects of 12-week Tai Chi Cardiac Rehabilitation Programme (TCCRP) and conventional exercise rehabilitation program (CERP) on inflammatory factors and adhesion molecules in patients with CHD were observed. M**ethod:** From October 2020 to November 2021, forty-six patients with coronary heart disease were jointly recruited at Anzhen Community Service Center, Chaoyang District, Beijing, and Wanjie Rehabilitation Hospital, Zibo, Shandong. After signing the informed consent form, they were randomly divided into the experimental group (Tai Chi Cardiac Rehabilitation Programme group, TCCRP) and the control group (conventional exercise rehabilitation program group, CERP) according to the ratio of 1:1, with 23 people in each group.There were 34 patients who finally completed the whole experiment, including 14 patients in the Tai Chi Cardiac Rehabilitation Programme group and 20 patients in the conventional exercise rehabilitation program group. The experimental group used TCCRP intervene and the control group used CERP intervene with 3 times a week, 60min each time, for a total of 12 weeks, including 4 weeks of hospital rehabilitation and 8 weeks of remotely online at-home rehabilitation. Inflammatory factors and adhesion molecules were detected before and after the intervention. R**esult**: After 12 weeks of intervention, C-reactive protein (CRP), interleukin 6 (IL-6), vascular cell adhesion molecule (VCAM-1), and intercell adhesion molecule (ICAM-1) all decreased significantly ($P < 0.01$). The anti-inflammatory factor interleukin 10 (IL-10) increased significantly in the TCCRP group ($P < 0.01$). There was no significant difference between the two groups before the intervention ($P>0.05$), and the VCAM-1 in the TCCRP group was significantly lower than that in the CERP group after the intervention ($P < 0.05$).**Conclusion**: The 12-week TCCRP and CERP intervention can effectively reduce the levels of pro-inflammatory factors CRP, IL-6 and adhesion molecules ICAM-1 and VCAM-1 in patients with coronary heart disease. Compared with CERP, the TCCRP can effectively improve the level of anti-inflammatory factor IL-10, significantly reduce the expression of adhesion molecule VCAM-1, and have a more positive effect on regulating the balance between pro-inflammatory and anti-inflammatory factors in patients, and improving the anti-inflammatory and anti-adhesion ability of patients. It is suggested to further apply and promote the TCCRP in the field of cardiac rehabilitation in the future.

Key words: Tai Chi cardiac rehabilitation programme, conventional exercise rehabilitation program, coronary artery disease, pro-inflammatory factors, anti-inflammatory factors, adhesion molecule