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The Effect of Preoperative Cardiopulmonary Rehabilitation on Pulmonary Infection after Cardiac Surgery

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Abstract

In recent years, the incidence of heart disease remains high, which is closely related to people's diet and living habits, and in cardiac surgery due to tracheal intubation, bed rest and other problems easy to cause postoperative pulmonary infection, we all know that cardiopulmonary rehabilitation training can improve the cardiopulmonary function of patients, our article on preoperative cardiopulmonary rehabilitation training on pulmonary infection after cardiac surgery to review.

Cardiovascular disease has become an important disease endangering the health of Chinese people, and its mortality rate accounts for 67.1% of the total number of cardiovascular disease deaths. In recent years, with the progress of medical technology such as various cardiac surgeries, the mortality rate has gradually decreased, but due to the inability to recover postoperative cardiopulmonary function, it is still unable to live normally or be weaned from the ventilator, and the quality of life has decreased.

A large number of evidence shows that cardiopulmonary rehabilitation can effectively improve the cardiopulmonary function of patients, mainly through respiratory rehabilitation and exercise training to improve the overall cardiopulmonary function of patients, and can improve the mental status of patients and improve exercise capacity, and cardiopulmonary rehabilitation also allows us to rehabilitation of heart disease from treatment to prevention, this paper mainly from the overview of cardiopulmonary rehabilitation and exercise methods to prevent pulmonary infection in patients after cardiac surgery.

Overview of Cardiopulmonary Rehabilitation

Definition of Cardiac Rehabilitation

Cardiac rehabilitation is to relieve the clinical symptoms of patients through comprehensive rehabilitation medical treatment, improve the daily life ability of patients, improve the quality of life, return to normal social life, and prevent the recurrence of cardiovascular disease. It is currently an important means of treating the chronic phase of the heart. The contents of cardiac rehabilitation include regular medication, exercise therapy, psychotherapy, diet therapy, and behavior therapy [1-14].

Definition of Pulmonary Rehabilitation

Pulmonary rehabilitation is an intervention for patients with discomfort symptoms and reduced daily activities, or decreased activities of daily living, chronic respiratory diseases. Pulmonary rehabilitation intervention modalities are comprehensive assessment and rehabilitation programs and implementation strategies involving multidisciplinary teams on the basis of evidence-based medicine. Pulmonary rehabilitation can stabilize and reverse the systemic manifestations of the disease, reduce symptoms, optimize functional status, increase activities of daily living and social participation, reduce the rate of acute onset and rehospitalization, and reduce the cost of medical care. Pulmonary rehabilitation has two main goals, to maximize physical, psychological, and social function, to educate patients how to improve mobility and self-care ability in daily life, to improve quality of life, and to reduce dependence on hospitalization.

Cardiopulmonary Rehabilitation Exercise Mode

Respiratory Training

Abdominal respiratory training quiet, supine, the abdomen put a sandbag of moderate weight, self-control of the thorax through the abdominal undulation uniform respiratory training.

Inspiratory resistor breathing training to control inspiratory volume and time.

It is required that after deep inspiration, the expiration is as thin and slow as a whistle, the airflow is gradually exhaled, and respiratory training should be done, and the training volume should be grasped, generally less than ten seconds each time, about ten times, and three groups should be done continuously, and the speed should be slow.

Passive training, requiring manual training by professional therapists, such as thorax, back, and scapular extrusion.

Aerobic Exercise and Resistance Training

Aerobic training belongs to the training of long-distance endurance, also known as "cardiopulmonary function training". It is through continuous and repeated activities, and in a certain period of time, with a certain speed and a certain training intensity, it is required to complete a certain amount of exercise, so that the heartbeat rate is gradually increased to the specified highest and lowest safe heartbeat range. Common training methods are brisk walking, jogging, Tai Chi and bicycle.

Resistance training, also known as resistance training, is a movement against resistance, the main purpose is to train the muscles of the human body, and traditional resistance training includes push-ups, dumbbells, barbells and other items.

Effect of Cardiopulmonary Rehabilitation on Pulmonary Infection after Cardiac Surgery

Study on the effect of cardiopulmonary rehabilitation on pulmonary function after cardiac surgery found that respiratory training can enhance the muscle strength and endurance of respiratory muscles, improve pulmonary ventilation, improve pulmonary function, but also increase the blood flow and activity of diaphragm, while reducing the standby time, can pull out the endotracheal tube as soon as possible, transfer out of ICU, return to the general ward and get out of bed as soon as possible.

Effect of cardiopulmonary rehabilitation on cardiac function after cardiac surgery Aerobic exercise enhances the ability of the cardiovascular system to deliver oxygen to muscles, allowing the body to adapt to higher intensity and longer lasting exercise, while reducing heart rate at rest, improving cardiac function, and improving quality of life.

Effect of cardiopulmonary rehabilitation on quality of life. Cardiac rehabilitation can enhance exercise tolerance and improve quality of life in patients. Moreover, exercise training can promote patients with coronary heart disease to maintain a positive and optimistic attitude to life, respiratory and exercise-based cardiopulmonary rehabilitation can shorten the length of hospital stay, promote patients to return to normal life as soon as possible, and improve the quality of life.

Conclusion

Respiratory training and exercise training are the core contents of cardiopulmonary rehabilitation, respiratory training can improve pulmonary ventilation, improve pulmonary function, in order to reduce hypoxia, and regular exercise training can increase myocardial oxygen supply, improve the work ability of the heart and arterial blood flow reserve capacity, and improve the quality of life of patients with disease. As rehabilitation workers, we should carry out detailed evaluation for patients and intervene in precise treatment after evaluation, so as to reduce the probability of postoperative pulmonary infection, reduce the cost and hospital stay, and return to the family as soon as possible.

References

1. Ashtonre, Tew GA, Aning JJ, et al. (2020) Effects of shortterm, medium-term and long-term exercise training on cardio-metabolic health outcomes in adults: systematic review with meta-analysis [J]. *Br J Sports Med* 54: 341-348. [crossref]
2. Zhang H, ChangR (2019) Eflects of Exercise after Percutaneous Coronary Intervention on Cardiac Function and Cardiovascular Adverse Events in Patientswith Coronary Heart Disease: SystematicReview and Meta-Analysis [J]. *Journal of sports once& medicine* 18: 213-222. [crossref]
3. Rezaei-Hachesu P, Oliyaee A, Safaie N, et al. (2017) Comparison of coronary artery disease guidelineswith extracted knowledge from data mining [J]. *J Cardiovasc ThoracRes* 9: 95-101.
4. Lanz J, Wyss D, R ber L, et al. (2019) Mechanical complications in patients with ST-segment elevation myocardial infarction: a single centre experience [J]. *PLoS One* 14: 209502. [crossref]
5. Gomes Neto M, Duraes AR, Conceicao LSR, et al. (2018) High intensity interval training versus moderate continuous intensity training on exercise capacity and quality of life in patients with heart failure with reduced ejection fraction: a systematic review and meta-analysis [J]. *Int J Cardiol* 261: 134-141. [crossref]
6. Wu Yan, Wang Xiujuan, Kang Xiaoyan, et al. (2018) Effect of preoperative rehabilitation training on cardiopulmonary function in patients with early stage cancer undergoing thoracoscopic surgery [J]. *Journal of Clinical Pulmonary Medicine* 23: 1217-1221.
7. Gao Zhenzhen, Ji Peng, Xia Yueqing, et al. (2015) Effects of different intensity aerobic exercise on cardiac function and exercise tolerance in patients after percutaneous coronary intervention [J]. *Chinese Journal of Rehabilitation Medicine* 30: 344-348.
8. Li Xue, Shanyan, Jiang Tingting, et al. (2021) Research progress of resistance exercise in nursing care of maintenance hemodialysis patients complicated with sarcopenia [J]. *Nursing Research* 35: 643-647.
9. Wang Lei, Gao Zhenzhen, Pan Huaping (2015) Effect of individualized aerobic exercise on heart rate recovery and exercise capacity in patients with coronary heart disease [J]. *Chinese Journal of Rehabilitation Medicine* 30: 242-246.
10. Zhang Lingyun, Bai Chuanchuan, Shu Bin (2018) Research progress on the protective effect of exercise training on heart after myocardial infarction and its mechanism [J]. *Chinese Journal of Rehabilitation* 33: 53-55.
11. Jiao Haixu (2020) Research progress on cardiac rehabilitation of patients with cardiovascular disease by resistance exercise [J]. *Journal of Qiqihar Medical College* 41: 1140-1141.
12. McMahon SR, Ades PA, Thompson PD (2017) The role of cardiac rehabilitation in patients with heart disease [J]. *Trends Cardiovasc Med* 27: 420-425. [crossref]
13. SIMON M, KORN K, CHO L, et al. (2018) Cardiac rehabilitation: A class1 recommendation [J]. *Cleve Clin J Med* 85: 551-558. [crossref]
14. Anderson L (2014) Cardiac rehabilitation for peoplewith heart disease: an overview of Cochrane systematic reviews. *Cochrane Database Syst Rev* 2014: 011273 [crossref]

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