Clinical Study of the Treatment of Coronary Heart Disease by Coronary Artery Bypass Grafting

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Abstract:
Objective: To study and analyze the clinical effects on the treatment of coronary heart disease (CHD) by using coronary artery bypass grafting (CABG). Methods: to randomly select 68 patients of coronary heart disease as objects of the study and then to perform the CABG by using non-cardiopulmonary bypass (NCPB) and finally to summarize and analyze its clinical treatment effects. Results: all patients were operated under NCPB. The inspection result after operation showed that there was a significant improvement in myocardium blood supply that compared with before operation. 38 of these patients did not suffer hypoxia or myocardial hemorrhage. Conclusion: CABG is safe and effective for the treatment of coronary heart disease by using NCPB. If indications can be strictly controlled, in general, it is worthy for clinical application.

keywords:
Coronary heart disease; Coronary artery bypass grafting (CABG); Non-cardiopulmonary bypass (NCPB); Clinical study.

In recent years, the incidence of coronary heart disease has increased year by year. It is becoming more and more important that explore the effective method for the treatment of coronary heart disease. The main clinical manifestations of the coronary heart disease were arrhythmia, angina, myocardial loss, even myocardial infarction or sudden death in severe cases [1]. The accepted and the most effective way to treat coronary heart disease is coronary artery bypass grafting (CABG). Performing CABG by using NCPB has shorter time of operation, fewer complications, and fewer traumas [2]. In this paper, the clinical effects of 68 patients undergoing CABGs were summarized and analyzed, and the report is as follows.

1. Data and Methods.
1.1. Clinical Data
68 patients with coronary heart disease were selected as the research subjects, including 42 males and 26 females with the ages of 48 ~ 76 years old, with an average age of (65.4 ± 5.6) years old. Among them, there were 2 cases of hypertension, 19 cases of multiple organ dysfunction, 35 cases of concurrent velar disease, and 12 cases of diabetes mellitus. There were 26 cases of stable angina pectoris, 24 cases of unstable angina pectoris and 18 cases of myocardial infarction. There were 46 cases with more than 3 coronary arteries that occurring lesion, 15 cases with 2 coronary arteries that occurring lesion, 23 cases of the lesion of the left main coronary artery.

1.2. Operation Method
All patients were treated by using NCPB. Each patient under general anesthesia had the assisted respiration by putting intubation in their tracheas. First cut an incision in the median position of the sternum, next before cutting the left internal mammary artery (LIMA) give the intravenous injection; inject about 1 mg/kg heparin at most no more than 1.5 mg/kg, controlling the activation and coagulation time of
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the whole blood of the patients within 240s~400s. Check one time every half hour. Then expose left anterior descending branch; fix the target vessel by the cardiac fixer; temporarily block the proximal and distal vessels of the stoma. As occasion requires, it is necessary to use the coronary shunt thrombus to make the great saphenous vein and the aorta ascendens anastomose. After the anastomosis was completed, use protamine to neutralize heparin and finally conduct sternal closure to complete the treatment.

2. Results

All patients were operated by using NCPB. The inspection result after operation showed that there was a significant improvement in myocardium blood supply that compared with before operation. 38 of these patients did not have hypoxia or myocardial hemorrhage. 65 cases were successfully treated (effective rate was 96.5%), 30 cases had myocardial ischemia and hypoxia (44.1%), 2 cases had loss of heart rate (3%) and 1 cases had multiple organ failure (1.5%).

3. Discussion

Coronary heart disease is the abbreviation of coronary atherosclerotic heart disease. It means that the coronary artery wall of the heart has atherosclerotic plaques due to various reasons, leading to stenosis of vascular lumen and insufficiency of myocardial cell oxygen supply, resulting in myocardial failure or generator lesion. With the change of people's life style and the improvement of living standard, the incidence of this disease is increasing year by year. It has become one of the most common heart diseases in China in recent years. With the continuous improvement of medical technology, new methods for treating coronary heart disease are constantly emerging. Coronary artery bypass grafting (CABG) is the main method for the treatment of coronary heart disease. Compared with westerns, Asians coronary arteries have smaller pipe diameter and are in poorer conditions, so it need higher requirement on the technique of anastomose. Therefore, the indications should be strictly controlled in order to reduce the risk of surgery during performing the CABG. Compared with the great saphenous vein, the left internal mammary artery has a better long-term patency rate than the great saphenous vein, but its requirement for technology is higher. Therefore, we must have comprehensive consideration and control the indications strictly when start a CABG. The CABG by using NCBP is performed on the surface of the contractile myocardium. It is quiet difficult and has many aspects that should be noticed. First, the heart rate and blood pressure of the patients must be control and ensure that the myocardial oxygen supply is sufficient. The heart rate is maintained at 80~90 times/min, and the blood pressure is 80~90 mm Hg. Secondly, the coronary artery bypass grafting by using NCBP and cardiopulmonary bypass(CPB) are similar. Good preoperative preparation and CPB machines must be prepared. When some exceptional cases happen, make adjustment to CPB treatment without any delay. Thirdly, the blood vessels must be anastomosed orderly. The vessels in front of the heart are anastomosed first, then are the inferior and side heart wall; the compensatory vessels are anastomosed first, followed by the blood vessels without compensatory function. Too short blood vessels will cause spasms, too long and easy to bend, which will impede the circulation of coronary artery. Therefore, the length of blood vessels must be suitable. After completing the vascular anastomosis, exhaust first. Finally, during the operation, the blood flow must maintain stable. Because blood vessels on one side of the heart and inferior wall will be exposed during the operation, and moving, reversing and shuffling the heart will cause a certain degree of influence on the blood flow of the heart, the target vessel must be fixed by the cardiac fixer. CABG by using NCBP is a new type of operation. It can avoid the damage caused by immune system injury and perfusion, myocardial ischemia, systemic inflammation and other symptoms, maximize the protection of the patient's heart function, and reduce arrhythmia, lesions on respiratory and nervous system. Myocardial infarction is the main cause of death after CABG, so we should try to avoid the occurrence of myocardial infarction, mainly through good anaesthesia, advanced myocardial protection technology and proper cardiopulmonary bypass management, so as to maintain good revascularization.
In conclusion, the coronary artery bypass grafting under the model of non-cardiopulmonary bypass can effectively eliminate the clinical symptoms, improve cardiac function, and has the characteristics of small trauma, safety and reliability, short operative time, short hospitalization time, and effectively avoiding CBP related complications. As a result, it is worth further research and application of medical staff in the future treatment to fundamentally improve the patient's condition and make patients satisfied, so that this treatment method can play a wider and better role.

References