Observation and Research on Therapeutic Effect of Coronary Intervention in Elderly Patients with Acute Coronary Syndrome

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Abstract: objective: to investigate the effect of percutaneous coronary intervention in elderly patients with acute coronary syndrome. Methods: a retrospective analysis of 100 patients with acs in our hospital's cardiology department was divided into 50 elderly patients (age ⩾60 years) and 50 young patients (ages <60 years). They all received pci and received complete revascularization observe the characteristics of coronary lesions, surgical success rate, complications, and short-term and long-term complications during follow-up. Results: compared with the young group, elderly patients were more likely to have hypertension and diabetes mellitus. Multivessel disease, left main disease, and> 35 mm long lesions were more common. The success rate of pci and surgical complications were similar in the two groups. There was no statistically significant difference in the incidence of major cardiovascular adverse events (mace) during the six-month follow-up and out-of-hospital follow-up. Conclusion: elderly patients with acute coronary syndrome have more lesion sites and branches, and the effect of coronary intervention is better.

1. Introduction

Acute coronary syndrome (acs) refers to a group of clinical syndromes on the basis of coronary atherosclerosis, with coronary plaque rupture accompanied by thrombosis as the main cause and acute myocardial ischemia as the common feature. It includes acute myocardial infarction (ami, st segment elevation, q wave or non-q wave) and unstable angina pectoris (ua). The aging of the population in our country is worsening, and the number of elderly patients with acute coronary syndrome (acs) is increasing year by year, which seriously threatens the health of the elderly population [1]. Coronary artery interventional therapy (pci) technology has developed rapidly in recent years and has become an important treatment measure for coronary heart disease patients in our country [2]. Studies have shown that coronary intervention is an effective treatment for acute coronary syndrome, which can significantly improve the prognosis of patients with good results [3]. The treatment of acute coronary syndrome is mainly drug therapy and interventional therapy. Clinical reports on the short-term efficacy of patients undergoing interventional therapy are more [4], while the long-term efficacy and safety period are relatively less. The purpose of this article is to compare and analyze the characteristics of coronary artery lesions, surgical success rate, complications and follow-up results of half a year between elderly and young acs patients receiving pci in our center, and to evaluate the efficacy of pci in elderly acs patients.

2. Data and Methods

2.1 General Information

A total of 100 patients with ACS who were hospitalized in the Department of Cardiology of our hospital were selected and divided into 50 elderly patients (age ⩾ 60 years) and 50 young patients (age <60 years) in the elderly group. They all received PCI and were completely revascularized. All patients met the diagnostic criteria for acute coronary syndrome. The duration of chest pain ⩾ 15min, the use of nitrate drugs was ineffective, the time from onset of symptoms to admission was less than 12 hours, the troponin I level significantly increased, and the ST segment elevation of

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more than 2 adjacent leads was more than 0.2mV. Exclusion criteria: those requiring revascularization due to restenosis; Angina pectoris caused by non-coronary artery disease; platelet dysfunction or thrombocytopenia (<80 × 109 / L); blood pressure ⩾ 180/110 mmHg; severe liver and kidney dysfunction

2.2 Drug Treatment

All patients were treated with clopidogrel bisulfate 600mg and aspirin 300mg immediately. Tirofiban hydrochloride was continuously pumped intravenously from 0.06 to 10.10 μg / (kg · min) until 36 to 48 hours after surgery. Thrombus was found during the operation Intracoronary injection of 10 ml tirofiban hydrochloride in heavy-load patients; If the patient is complicated with third degree atrioventricular block, cardiac pacemakers should be preset in advance. According to the angiographic results of the patient's coronary artery, the nature and extent of the lesion should be determined, and stenting or percutaneous transluminal coronary angioplasty should be performed. The choice of stent is determined according to the results of coronary angiography and the inner diameter of the diseased vessel. Long-term oral administration of aspirin 100 ~ 325 mg/d, clopidogrel 75 mg/d and other drugs after surgery. Follow-up method: every 2 ~ 4 weeks, the outpatient clinic was followed up, and chest pain, chest tightness and dyspnea were recorded, and routine ECG examination was performed. Telephone follow-up was conducted every six months to record the patients' relevant clinical conditions, including angina pectoris, myocardial infarction, cardiac insufficiency, death and causes of death.

2.3 Coronary Angiography and Pci

Judkins method was used to select radial artery or femoral artery route for emergency or elective coronary angiography, in which coronary artery lesions involving left anterior descending branch, circumflex branch, middle branch, right coronary artery and its main branches were single-branch lesion group. Adjust the applied dose of bivalirudin during the operation according to the activated clotting time (ACT) index (monitor ACT after 5 min of bivalirudin, if ACT <225s, then add 0.3 mg / kg bivalirudin intravenously). According to the thrombus load, 0.2 mg / (kg.h) was continuously pumped for at least 30 min. The heparin group was given intravenous injection of 100 U / kg. Patients with acute coronary syndrome who have not undergone PCI treatment are given conventional oral enteric aspirin of 100mg/d and clopidogrel of 75 mg/d. According to the patient's condition, thrombolytic and/or nitrate drugs, ACEI drugs, betareceptor blockers and other drug standards are selectively given to resist heart failure. Contrast-induced nephropathy is considered if the serum creatinine level increases by 44.2μmol/ L or 25% from the baseline 24~ 48 h after operation, and other influencing factors such as heart failure, severe arrhythmia, myocardial infarction, etc. are excluded.

2.4 Observation Index

The success rate of PCI, complications, cardiac death, recurrent AMI, refractory angina pectoris and incidence of stroke during hospitalization and 6 months of follow-up outside hospital were observed.

2.5 Statistical Method

SPSS 11.0 statistical software package was used for statistical analysis. Count data were analyzed by $\chi 2$ test. Measurement data were expressed as mean ± standard deviation ($\bar{x} \pm s$). Using t test, $P < 0.05$ was considered statistically significant.

3. Result

3.1 General Data Comparison

See Table 1. Compared with the young group, the proportion of elderly patients with hypertension and / or diabetes was higher ($P < 0.05$). There was no significant difference in smoking

and dyslipidemia between the two groups; The proportion of multivessel disease, left main disease, and> 35mm long disease in the elderly group was higher.

Table 1 Comparison of Clinical Characteristics and Coronary Artery Characteristics between the Two Groups (Cases,%)

Group	n	General information				Coronary artery results				PCI success rate
		Hypertension	Dyslipidemia	Smoking	Diabetes	Single vessel disease	Multivessel lesion	Combined with left main lesion	>35mm long lesion (place)	
Elderly group	50	46(76.0)*	40(66.0)	40(17.2)	20(30.6)*	16(27.1)*	44(708)*	8(10.8)*	14(21.3)*	45(92.8)
Youth group	50	13(20.0)	41(75.6)	45(77.6)	7(11)	30(48.5)	30(50.3)	4(5.1)	4(5.0)	47(95.6)

Note: Compared with the youth group * P <0.05

3.2 Comparison of Perioperative Complications of Pci

Intraoperative complications: 4 cases (7.3%) in the elderly group: 5 cases of collateral compression occlusion, 1 case of coronary artery dissection and 1 case of postoperative no reflow. 4 cases (6.0%) in the youth group: 2 cases of compression occlusion of the lateral branch and 2 cases of coronary artery dissection. Among them, tirofiban improved in the elderly group with no reflow. The incidence of MACE, sudden death rate, and incidence of severe postoperative hemorrhage gradually increased with time in the two groups of patients. The incidence of various indicators in the conservative treatment group was slightly higher than that in the interventional treatment group during the postoperative half year and one year. There was no statistically significant difference between the observed parameters (P > 0.05); The average number of stents, stent diameter and length in bivalirudin group were higher than those in unfractionated heparin group, but the difference was not statistically significant (p > 0.05). One case of subacute stent thrombosis, one case of obstinate angina pectoris and one case of cerebral apoplexy were found in the youth group, and the incidence rate of complications was 4.0%. Acute or subacute thrombosis patients were cured by emergency PCI. There was no significant difference in the incidence of complications between the two groups during hospitalization (p > 0.05)

3.3 Mace Occurrence in Half a Year after Discharge from Hospital

In the elderly group, coronary angiography was reexamined in 26 cases (reexamination rate was 48.7%), restenosis of target lesion was accompanied by PCI in 2 cases. In Qingnian group, coronary angiography was reexamined in 27 cases (reexamination rate 45.7%), restenosis of target lesion and PCI in 3 cases. During the 30-day follow-up, 1 patient (1.7%) was hospitalized for angina pectoris, and 2 patients (3.4%) were elderly patients. The elderly patients and unfractionated heparin group were hospitalized for recurrent angina pectoris (16. 7% and 5.3%, P = 0.832%), the difference was not statistically significant. The incidence of MACE was 8.4% in the elderly group and 6.6% in the young group. There was no significant difference in the incidence of MACE between the two groups within half a year (P >0.05).

4. Discussion

The elderly are a risk group with a significantly increased incidence of coronary heart disease. Their age is an independent and important risk factor for the occurrence and development of coronary heart disease. The mechanism mainly lies in the rupture of atherosclerotic plaque in coronary artery, causing platelet adhesion, aggregation and release, activating the coagulation system of the body, easily causing thrombosis, and inducing vasospasm in severe cases. Conventional drug therapy includes antithrombotic drugs, intensive statins, etc. Aspirin and clopidogrel have become the main drugs for ACS treatment due to their different antiplatelet mechanisms. They are especially suitable for high-risk ACS and patients after treatment, and can significantly reduce the incidence of MACE in patients [6]. In addition, elderly patients have their

own special characteristics of coronary artery disease [7]: multivessel disease, combined left main disease, and> 35mm long lesions are more common in the elderly group. The lesions are often severely calcified and diffuse, which results Interventional treatment becomes more difficult. According to the different pathogenesis and clinical manifestations of high-risk ACS, the timing and indications of interventional therapy are different. For STEMI-ACS patients, direct interventional therapy, easy PCI, remedial PIC and deferred PCI are generally adopted. For NSTE-ACS patients, early PCI is generally recommended. Comparing the thrombocytopenia before and after PCI between the two groups, bivalirudin can significantly improve PCI, but there is no statistically significant difference in MACE incidence between 30 days and 1 year follow-up.

This study shows that the immediate success rate of PCI in elderly patients and young patients with ACS is similar, one in the elderly group with coronary dissection and one without reflow in the elderly group, two with coronary dissection in the young group, and perioperative period in the elderly group. There was no significant difference in the incidence of complications and MACE during hospitalization (P> 0.05). Coronary angiography can clearly show the specific lesion site and lesion situation of patients with acute coronary syndrome, which is conducive to the accurate operation and is of great significance to the treatment of diseases and improvement of prognosis of patients [8]. Coronary artery interventional therapy can be operated in time according to the specific situation of the patient, with less trauma to the patient, and is suitable for elderly patients.

This study also found that bilateral MCA flow velocity asymmetry is closely related to the prognosis of patients with cerebral infarction. In patients with acute cerebral infarction in the bilateral MCA asymmetric group, the BI score after 6 months was significantly lower than that in the symmetrical group (p <0.05), and the prognosis was poor; suggesting that domestic bivalirudin can be used for anticoagulation of PCI and bleeding Incidence rates were significantly lower than heparin. 7Patients over 5 years old have many complications and extensive coronary artery lesions. The success rate of interventional surgery is similar to those under 75 years old, but the mortality rate in hospital is relatively high. However, attention should be paid to controlling the intensity and time of anticoagulant antiplatelet drug treatment after operation to prevent severe hemorrhage after operation. Moreover, due to the occurrence of gastric mucosa injury or gastric ulcer induced by anticoagulant antiplatelet drug, attention should be paid to protecting gastric mucosa during medication. Wu Yue et al [9] also made relevant research. TCD examination was carried out in 73 patients with acute cerebral infarction within 12 hours, and 90 days follow-up was carried out for patients with BIlateral MCA flow asymmetry. the correlation analysis between bi score and bilateral MCA flow asymmetry showed that bilateral MCA flow asymmetry was significantly correlated with mortality and poor prognosis (BI⩽60), which was basically consistent with the results of this study. Therefore, asymmetry of bilateral MCA flow velocity can be used as an important indicator to judge poor prognosis, which should be paid attention to to guide treatment.

After six months of discharge, 2 patients with target lesion restenosis and PIZ in the elderly group and 2 patients with target restenosis and PIZ in the young group. One patient in the elderly group died within six months due to heart failure, and one patient had a stroke in the young group. The incidence of MACE was 8.4% in the elderly group and 6.6% in the young group. The difference was not statistically significant (P> 0.05). This shows that there are many lesions in elderly patients with acute coronary syndrome, and multiple lesions can occur simultaneously in coronary artery. How to treat it is also controversial [10], but we believe that PCI is more suitable for high-risk elderly patients with coronary syndrome through research and analysis. From the long-term effect, the survival rate of patients has been significantly improved, and the sudden death rate and MACE incidence rate have been significantly reduced. Elderly patients with acute coronary syndrome can obtain the same success rate and therapeutic effect as young and middle-aged patients after interventional therapy. According to this, we believe that age is not a taboo for PCI to close blood vessels and coronary arteries with severe stenosis, which can not only save the patient's life, but also achieve greater benefits for revascularization, higher event-free survival rate, improved cardiac function and left ventricular structure, and improved patient's quality of life. Delayed injection of bivalirudin during PCI perioperative period can significantly reduce the incidence of

bleeding events without increasing the incidence of cardiovascular and cerebrovascular events for 30 days and 1 year, providing more evidence for clinical application and research of bivalirudin in China.

5. Conclusion

The results of this study show that PCI performed by experienced centers for 80-year-old ACS patients has a high success rate and relatively low incidence of short-term and long-term complications. PCI is an effective treatment for this group of high-risk patients. Although the therapeutic effect of coronary intervention for elderly patients is poorer than that for young and middle-aged patients, it can still effectively improve the prognosis compared with drug therapy alone. Therefore, age itself should not be a limiting factor for interventional therapy when clinical conditions permit. The occurrence of cerebrovascular events is related to the asymmetry and stenosis degree of MCA flow velocity on both sides. The higher the asymmetry and stenosis degree, the greater the risk of cerebrovascular events.

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