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Case Report

A Case of Giant Main Coronary Artery Aneurysm Complicated with Acute Myocardial Infarction

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Abstract

A coronary artery aneurysm is uncommon and frequently asymptomatic, especially the giant left main artery aneurysm is more rare. It's only found when there are serious complications. This report presents a surgical case of a giant coronary artery aneurysm in left main, which was complicated by acute myocardial infarction. A 18-year-old man with sudden chest pain was referred to our hospital. Myocardial infarction was suspected, and the patient developed ventricular fibrillation soon after admission and then emergency coronary angiography was performed. A giant coronary aneurysm was found in the left main of the left coronary artery. The coronary aneurysm was ligated, and the patient was not excised for pathological examination. The patient had two serious ventricular arrhythmias after coronary artery bypass grafting, manifested as pulseless ventricular tachycardia and ventricular flutter. The patient was given implantable defibrillator, and he suffered recurrent ventricular fibrillation and died out of hospital.

Keywords: *Coronary Artery Aneurysm; Acute Myocardial Infarction; Ventricular Fibrillation*

Introduction and Case Report

The patient, male, 18 years old, was admitted to the hospital for one hour during 5:00 p.m., June 15, 2015 due to sudden chest pain. One hour ago, when the patient walked up to the third floor, he suddenly had squeezing pain in the back of sternum and precordial area. He had a rest for ten minutes without relief, and the chest pain continued to increase. He had three times of sweating and blackness, each time lasting for 2 - 3 minutes. He came to our hospital for emergency treatment without any treatment outside the hospital. Admission physical examination: t 35.7. C. P 86 times/min, R 19 times/min, BP 88/60 mmhg (1 mmhg = 0.133 kpa). Clear mind, sweating, painful expression, slight cyanosis of lips, no anger in jugular vein, thick breath sounds in both lungs, no dry and wet rales; no protuberance in precordial area, no enlargement of heart murmur boundary, heart rate 86 times/min, regular rhythm, no murmur in each valve auscultation area. After admission, acute extensive anterior myocardial infarction (Figure 1) was shown in ECG. About 3 minutes after admission, the patient suddenly had loss of consciousness and convulsion. ECG monitoring showed ventricular fibrillation. Defibrillation was given immediately and the patient turned into sinus rhythm. Auxiliary examination after admission: blood routine, urine routine, coagulation five, HIV, hepatitis B five, liver and kidney function and immune nested examination were normal. After the patient was admitted to the hospital, the continuous lidocaine treatment was transferred to the interventional catheterization room for emergency coronary angiography, which indicated that the left main artery had dilated aneurysm, the maximum diameter of the tumor was 26mm, no obvious calcification shadow was found, the opening of the anterior descending branch was occluded, no obvious stump shadow was found, and the right coronary angiography was normal (See figure 2 and 3). It was considered that the emergency interventional treatment could not be performed and thrombolysis and antithrombotic therapy were given in a short time Treatment. Auxiliary examination after admission: blood routine, urine routine, coagulation five, HIV, hepatitis B five, liver and kidney function and immune nested examination were normal. At 5 hours

after admission, TnI was significantly higher than 10.0 ng/ml (0 - 0.014 ng/ml), 250.5 ng/ml (normal value 0 - 4.87 ng/ml), 612.4 ng/ml (normal value 28 - 72 ng/ml). After the patient's condition is stable, he should be discharged and transferred to a higher hospital for further treatment of left main artery aneurysm. Three months after the onset of the disease, the patient went to the superior hospital for surgical treatment. The coronary aneurysm was ligated, and the patient was not excised for pathological examination. he patient had two serious ventricular arrhythmias half a year after coronary artery bypass grafting, manifested as pulseless ventricular tachycardia and ventricular flutter. On January 11, 2016, the patient was given implantable defibrillator, and on July 20, 2019, he suffered recurrent ventricular fibrillation and died out of hospital.

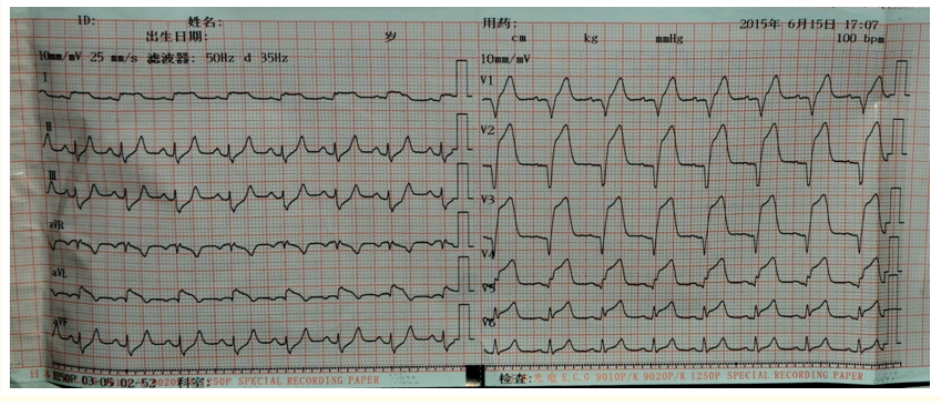

Figure 1: *ECG showed acute extensive anterior wall myocardial infarction*

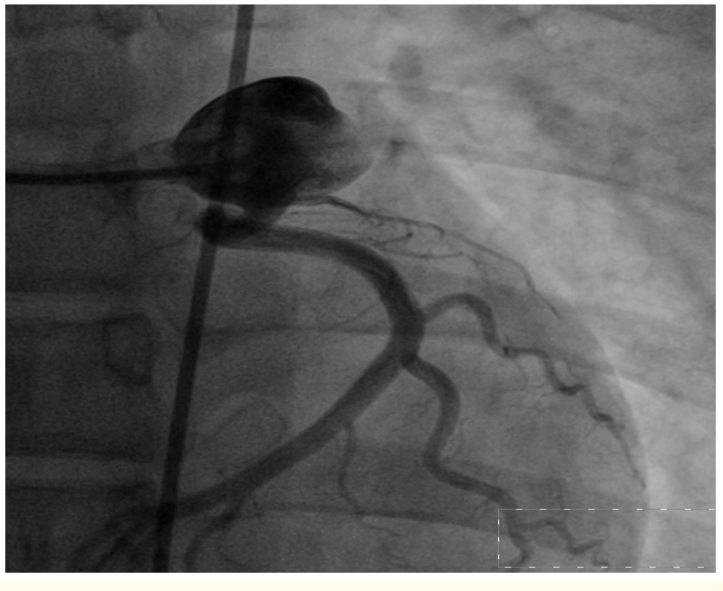

Figure 2: *Coronary angiography showed that the left main trunk was a huge tumor like expansion, the proximal left anterior descending branch was completely occluded, the circumflex branch was normal and well developed.*

Figure 3: *Right coronary angiography showed normal development of right coronary artery, no lesions were found.*

Discussion

Coronary aneurysm refers to the local or diffuse dilation of coronary artery, which is more than 2 times of the diameter of adjacent coronary artery or 1.5 times of the diameter of the largest coronary artery [1,2] and may be single or multiple. Giant coronary artery aneurysm is usually defined as those with a diameter greater than 20 mm [3]. The incidence rate of incidence of coronary artery aneurysms is low, the incidence rate is 0.02%-0.04% [4], but the incidence rate is 1.1% - 4.9% [1] in coronary artery surgery, while giant coronary artery aneurysm is very rare [5]. The clinical manifestations are various and nonspecific, which mainly depends on the size, location, pathological changes of the aneurysm itself, as well as whether there are cardiac complications. Generally speaking, coronary artery aneurysms are divided into two categories: congenital and acquired. The pathogenesis of congenital coronary artery aneurysms is mostly segmental absence of the middle layer of the arterial wall, myofibrous dysplasia and abnormal tissue arrangement. The aneurysm is formed by the continuous expansion and thinning of the diseased blood vessels, or by the unclear causes of the disease, which makes the arterial wall necrotic and degenerative, especially the invasion of the middle layer. The serious destruction of the elastic fiber makes the arterial wall weak and forms the aneurysm, or the aneurysm formed by the coronary artery fistula. Acquired coronary artery aneurysms often have definite causes such as coronary atherosclerosis, Kawasaki disease, supraaortic stenosis, advanced syphilis and infective endocarditis. Because of the large size of the aneurysm, slow blood flow and siltation are easy to form thrombus, which is easy to cause acute myocardial infarction and sudden death [6]. This case is a young patient with normal development and no obvious etiology, and the aneurysm occurs in the left main trunk, which is very large and rare. It is the most likely cause of acute myocardial infarction. Other possible causes include coronary artery spasm, thrombus shedding and embolism in other parts and coronary artery inflammation.

Conclusion

Giant coronary artery aneurysm is a serious and fatal cardiovascular disease. It needs to be operated as early as possible, even if there is no symptom.

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