A Surgical Case of Apical Aneurysm without Hypertrophic Cardiomyopathy

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Introduction

Although there are several reports of an apical aneurysm associated with hypertrophic cardiomyopathy,1,2) an apical aneurysm without hypertrophic cardiomyopathy is rare. The mechanism of aneurysm formation remains unknown. In this report, we described a surgical case of apical aneurysm without hypertrophic cardiomyopathy.

Case Report

A 53 year-old asymptomatic woman, who had a history of double valve replacement using mechanical valves due to infective endocarditis 18 years ago, was admitted for a routine examination. A saccular and akinetic aneurysm at the apex was first identified by an annual echocardiographic check; the aneurysm had not been detected previously. Left ventricular function was normal without any hypertrophic cardiomyopathy. Electrocardiography showed no ventricular arrhythmia. During the previous operation, left ventricular apical venting was not performed, and aneurysmal formation was not clearly identified. Reconstructed multi-slice computed tomography demonstrated a 3.0 × 2.8 cm aneurysm with ventricular trabeculation at the apex (Fig. 1). There were no coronary abnormalities. The aneurysmal sac was very thin at the free wall, which was less than 5 mm in thickness (Fig. 2). Due to the risk of spontaneous rupture or systemic thromboembolism, the operation was performed through a left thoracotomy with a femoro-femoral bypass. The aneurysmal sac was opened under ventricular fibrillation at 28°C hypothermia and was excluded by a linear closure with pledged-support sutures. The patient recovered well and was discharged 11 days later. The pathology of the aneurysmal wall demonstrated a true aneurysm with three layers (Fig. 3).

Discussion and Conclusion

Although there are several reports of an apical aneurysm associated with hypertrophic cardiomyopathy,1,2) an apical aneurysm without hypertrophic cardiomyopathy is rare. The etiology of an apical aneurysm remains unknown. The apex was originally subjected to an increasing and sustained systolic stress. The pressure load on the apex will impose increasing oxygen demand and will impair coronary flow, leading chronic myocardial ischemia. It has been hypothesized that an apical aneurysm may occur as a result of ventricular wall weakening due to local ischemia with an increased afterload, and high apical pressure resulting from hypertrophic cardiomyopathy.1) In the present case, the patient had neither coronary lesions nor a history of myocardial infarction. She had a history of double valve replacement due to infective endocarditis, and it is unknown whether the previous infection may have been associated with aneurysmal formation.

The differential diagnosis between a ventricular aneurysm and a diverticulum remains incomplete.3) Ventricular diverticulum is a rare congenital anomaly, characterized by synchronous contractility and is usually associated with a midline thoracoabdominal defect with or without other heart malformations.4) On the other hand, an aneurysm is generally a fibrous, saccular lesion with paradoxical contraction.5) In our case, apical aneurysmal formation was not identified during the previous operation. Echocardiography showed a saccular and akinetic...
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Aneurysm at the apex. Histopathologic examination revealed that the myocyte layer was very thin, and partially replaced by myocardial fibrosis.

The operative indication in patients with apical aneurysm is controversial. The risk of thromboembolism is low, because this case receives anticoagulation therapy due to double valve replacement. In addition, ventricular rupture of an apical aneurysm with hypertrophic cardiomyopathy is uncommon. However, surgical exploration was performed. In this case, the aneurysmal formation was first detected this time by an annual echocardiographic check, although the time when the apical aneurysm occurred was unknown. The aneurysm is a possibility without of being the size of the extent, which is pointed out to several years. Moreover, the patient, 53 years old, is young, relatively.

References