Chronic dissection of the ascending aorta after previous cardiac surgery

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Abstract

Chronic dissection of the aorta after cardiac surgery in the early or late period has a very high mortality rate. In this report we presented a 37 year old patient who had had a mitral valve replacement (MVR) and was operated on with the intention to perform a second MVR, and was found to have a chronic localized aorta dissection in the previous cardioplegia cannule entrance. The dissection was repaired by suturing from outside with internal support to the intima.

INTRODUCTION

Late aortic dissection after cardiac surgery are seen in a ratio of 0.12-0.16% and have a high operative mortality. It is seen more frequently in cases in which aortic valve replacements are performed. Aortic valve pathology, hypertension and Marfan syndrome are predisposing factors for dissection of the aorta. The potential injury areas during cardiac surgery are: cross clamp region, suture lines and cannulation zones.

The manipulation of the ascending aorta, together with the use of cardiopulmonary bypass (CPB), raises the tendency for dissection, especially if the case has arterial wall anomalies.

CASE REPORT

A 37 years old female patient had undergone MVR with bioprothetic valve 6 years ago. The patient turned into emergency room 2 weeks ago with high fever, cold chills and shaking, and was admitted to the cardiology service with 39°C fever and 19.000 leucocytes. Echocardiography was performed to the patient whom was thought to have bioprothetic valve endocarditis. The results were as follows: left atrium diameter 6 cm, left ventricular endsystolic diameter 4.5 cm, endiastolic diameter 5.5 cm, dysfunctional mitral bioprothetic valve (gradient 28/19mmHg, valve area 1.1cm²), 2° tricuspid insufficiency, left ventricular EF: 55%, Pulmonary artery pressure (PAP): 65mmHg. Aort diameter: 3.4cm. Abscess formation in the annula of the mitral valve and multiple vegetations were discovered upon the valve (The aorta diameter of the case was measured as 3 cm before the first operation). Streptococcus viridans was isolated from blood cultures and appropriate antibiotics were started according to the culture. The fever was gone on day 5 and the case was operated on. After median sternotomy, the adhered segments were separated and aorta-bicaval cannulation performed. For antegrade cardioplegia, cardioplegia cannule needle was tried to be placed with a purse suture to 0.5cm proximal from the old cardioplegia cannule entrance. But as the aorta could not be entered and no blood came it was given up. As the case was accepted to be convenient for direct perfusion with aortotomy, heart artery pump was started and cross clamp was placed on the aorta. When aortotomy was performed, under the old cardioplegia entrance hole, on the front wall, a 5 cm area of chronic dissection, full of organized thrombus was found (Fig I).
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The intima was freed by cleaning the thrombus. By hanging both sides, direct cardioplegic was given from the left and right coronary ostiums. A left atriotomy was performed and the bioprothesis full of vegetations, covered with pus and abscess was excised. The surrounding tissue was debrided and the left atrium was washed with 0.9% cold isotonic solution. MVR was performed with a number 29 no metallic valve (Redo). As the dissection area was fibrotic, graft replacement was not considered. The dissected area in the aorta was repaired from the outside with direct continuous suture, with the help of separate plegit support sutures from inside. The rest of the layers were closed as appropriately and the procedure finished. Antibiotics were given postoperatively for 3 more weeks and the case was healthily discharged.

DISCUSSION

The rate of intra/perioperative or iatrogenic aorta dissection in cardiac operations using cardiopulmonary bypass is around 0.12-0.16%. Repair techniques in dissections during cardiac surgery may show differences. In localized, easily controllable acute dissections, the repair of the problematic area is possible under cross. Partial patching, direct repair can be done. If the dissection advances towards the arcus, the procedure gets more complicated and a femoro-subclavian cannula may be needed. And most of the time a graft implantation might have to be performed.

In acute or chronic aorta dissections seen in the late period after cardiac operations the procedure gets even more difficult. In acute dissections, after diagnosis, the intervention should be as early as possible. In these cases re sternotomy is needed and the mortality is very high (10-30%). Chronic cases can be operated electively with lower mortality rates. As we mentioned before, in our case too, direct repair was possible.

Aortic dissection due to manipulation is rarely seen. In a 10 year study from Erentu? et al., nine cases operated for aortic dissection, seen in the late period after aortic valve replacement, were evaluated retrospectively. Five cases were acute dissection, and in four the dissection was chronic. The dissection was in the aortic cross clamp region in three cases, in the aortotomy region in two and in the aortic cannule region in one. In the rest of the patients, the origin of the dissection could not be determined.

The surgical approach and the results differ according to the types of aortic dissection (acute/chronic). The important thing is to avoid manipulations that may lead to dissection. A big rise of blood pressure under cross, plaques in the aortic area where the cross clamp is placed, damage of the intima or media of the aorta due to pursé sutures, a laceration due to cardioplegia needle, placing more than one clamp on the aorta, may all lead to acute or chronic dissection.

In patients whom the ascending aorta was affected due to surgical manipulation, postoperative late period dissection needs surgical repair. In these patients, this complication can be avoided by detailed evaluation during their first operation.

References

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