Our strategy of coronary bypass procedure in a case with bicuspid aortic valve and mild dilation of ascending aorta

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Citation

Abstract
Bicuspid aortic valve is the most common congenital cardiac anomaly in the adult population including other cardiovascular diseases. In this study we present our strategy of coronary bypass procedure in a case with bicuspid aortic valve and mild dilation of ascending aorta.

INTRODUCTION
Renewed interest for aortic valve disease has evolved in recent years (1). The bicuspid aortic valve affects 1 to 2% of the population and may be complicated by aortic stenosis or aortic insufficiency. The bicuspid aortic valve is associated with abnormalities of the aortic wall such as aortic aneurysm (2). Bicuspid anatomy of the aortic valve is associated with aortic dilatation in more than 50% of patients (3). Aortic wall abnormalities associated with bicuspid aortic valve are due to cystic medial necrosis (2).

CASE PRESENTATION
Our case was a 55-year-old male who was suffering from exertional dyspnea for 4 months. His transthoracic echocardiography revealed a bicuspid aortic valve and an ascending aorta of 41 mm in diameter. A minimal insufficiency was present in the aortic valve. Left ventricular endystolic- and enddiastolic diameters were 42 and 27 mm, respectively. Coronary angiography identified 2 separate significant stenotic lesions in left anterior descending and proximal right coronary arteries (Figures 1&2). No insufficiency in aortic valve was observed and ejection fraction was measured as 60%.

Figure 1
Figure 1

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Our case was taken into operating room with these findings. Following a median sternotomy, pericardium was opened longitudinally. Mild dilation of the ascending aorta was observed (Figure 3).

After heparinization, extra-corporeal circulation was established between the venae cavae and the ascending aorta. A cross clamp was placed on aorta and by antegrade intermittent isothermic blood cardioplegia from aortic root, cardiac arrest was established. Hypothermia was moderate (30°C). Left internal mammarian artery was thin in calibration with suboptimal flow characteristics. Therefore, right great saphenous vein was prepared for venous graft and distal anastomoses to left anterior descending- and right coronary arteries were completed. Proximal anastomoses to the ascending aorta were performed without declamping the aorta regarding degenerative structure of its wall (Figure 4).

He did not required inotropic support during weaning from cardiopulmonary bypass and early postoperative period. Postoperatively on the day of discharge and after 3 months an echocardiographic investigation was revealed the same findings. The long-term clinical result is excellent.

DISCUSSION

Bicuspid aortic valve (BAV) is the most common, congenital cardiovascular malformation and is associated with a number of conditions leading to increased morbidity and mortality, including other cardiovascular malformations (4).

The recognition of the bicuspid valve in patients with coronary artery disease remains an important challenge to the clinician, whereas preoperative knowledge of valve morphology would be helpful in planning the surgery (5).

The long-term stability of bicuspid aortic valve is excellent in the absence of gross aortic pathology (3). Most patients with a bicuspid aortic valve will develop some complication during life (2).

The purpose of the study of Roberts et al. was to determine the effect of simultaneous coronary artery bypass grafting (CABG) and the influence of valve structure on both early
and late survival in quadragenarians having aortic valve replacement (AVR) for aortic stenosis (AS) (with or without aortic regurgitation). In 48 adults including 7 with and 41 without simultaneous CABG. The aortic valve was congenitally unicuspid in 15 patients (31%), congenitally bicuspid in 32 (67%), and 3-cuspid in 1 (2%) (6).

The person with bicuspid aortic valve requires continuous surveillance to treat associated lesions and prevent complications (2).

References
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