Medical Expertise

"Development of the European Network in Orphan Cardiovascular Diseases"
„Rozszerzenie Europejskiej Sieci Współpracy ds Sierocych Chorób Kardiologicznych"

EXPERT: Dr Bartosz Sobień, cardiologist

Affiliation: *Department of Cardiac and Vascular Diseases, John Paul II Hospital, Krakow, Poland*

CASE SUMMARY

Authors discussed the case of 43 year old man with aneurysmal enlargement of the ascending aorta and the artificial aortic valve implantation (St. Jude 23 mm). In childhood patient was diagnosed with aortic regurgitation with stenosis of the left ventricular outflow tract. In 1983, he underwent implantation of artificial aortic valve.

DISCUSSION

Several studies have evaluated the natural history of AscAo dilatation in the absence of AVR. Coady reported a rate of 0.12 cm/year in a cohort of 79 patients followed for a mean of 25.9 months. Hirose reported a mean growth rate of 0.28 cm/year based on a sample of 11 patients with ascendingaortic aneurysm followed for a mean of 34 months. Masuda described another nonoperative series of 14 patients with ascending aortic aneurysm followed by computed tomography(CT) scan for a mean of 36 months. The mean expansion rate was 0.13 cm/year with no significant differences between the ascending, transverse, and descending aorta. Finally, Dapunt reported a rate of 0.43 cm/year for a series of 67 patients with thoracic or thoracoabdominal aneurysm followed by 3-D reconstruction of CT scans. It is suspected that in patients without congenital heart disease or abnormal connective tissue, the hemodynamic effects of AS and AR may contribute to progressive ascending aortic dilatation. By correcting these flow patterns, AVR may modify the natural history of ascending aortic dilatation. Further investigation to test this hypothesis is required. Previous studies have identified several different predictors of progressive dilatation. Dapunt identified initial aortic size and smoking as independent predictors. Masuda found diastolic blood pressure, renal failure and initial aortic size to be predictors of expansion by univariate analysis. However, after adjusting for differences by multivariate analysis, only initial aortic size was predictive. Using logistic regression, Palmieri reported male gender, fibrocalcific

changes in the aortic valve, and left ventricular wall motion abnormalities to be correlated with aortic root dilatation. Other investigators have noted that ascending aortic dilatation is over-represented in patients with bicuspid valves and in those with Marfan's syndrome7–11 leading to speculation that these conditions may be manifestations of a common developmental defect.

EXPERT'S OPINION

The patients with BAVs showed progressive dilation of the proximal ascending aorta even after elective AVR with a St Jude Bioprosthesis. Current guidelines from the ACC/AHA should address the increasing evidence of aortic dilation after AVR. We strongly encourage to surgical repair of the ascending aorta at time of AVR for BAV when the diameter exceeds 4.0 cm instead of 4.5 cm. Further studies with larger cohorts and valve registries should be collected to provide the safety and utility of AVRs. We also recommend that the standard of care should be changed to lifelong serial monitoring of the ascending aorta in all patients after AVR.

CONCLUSION

Standard of care should be lifelong serial monitoring of the ascending aorta. We strongly encourage to surgical repair of the ascending aorta at time of AVR when the diameter exceeds 4.0 cm. In conclusion the patient should undergo the procedure of ascending aorta repair.

REFERENCES

1. Cohoon KP, Foley J, Dieter RS, et al. The development of ascending aortic aneurysms after elective aortic valve replacement with St Jude mechanical valve prosthesis in the bicuspid patient: a pilot study.Angiology. 2013 Jul;64(5):379-84.
2. Andrus BW, O'Rourke DJ, Dacey LJ, et al. Stability of Ascending Aortic Dilatation Following Aortic Valve Replacement. Circulation. 2003; 108: II-295-II-299.