Use of Transesophageal Echocardiography in Aortic Valvuloplasty in children. Advantages?

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BACKGROUND AND OBJECTIVE

Aortic valvuloplasty has become well established palliative treatment of congenital aortic stenosis, as a high percentage of these children undergo posterior hemodynamic and/or surgical procedures.

We speculate that the use of transesophageal echocardiography (TEE) can help optimize this procedure, guiding technical aspects of the catheterization, and providing continuous hemodynamic assessment.

METHODS

Retrospective analysis and comparison of aortic valvuloplasties guided by TEE versus those not guided by TEE at our institution over a 9 year period.

RESULTS

Fifty-six primary valvuloplasties were included, of which 40 (70.2%) were performed under TEE guidance (35 with ACUNAV intravascular catheter, 3 with standard paediatric TEE probe, 1 with the microTEE probe and 1 with the 3D-TEE probe). The median age was 1.15 months (IQR 0.20-4.21). Associated congenital cardiac defects were present in 46.9% of the patients. 76.8% of the procedures were performed via femoral access, and right carotid surgical approach was used in the rest. Comparing the Fluoroscopy time in procedures performed with TEE guidance was 6.3 minutes less as compared to non TEE guided catheterisations (p=0.01). The mean number of balloon dilatations per procedure was 2.05 in the TEE group, and 2.76 in the group without echo guidance (p=0.02). We compared the measurement of the aortic ring by echocardiography and by angiography obtaining an intraclass correlation coefficient of 0.99. 78.6% were uncomplicated catheterisations with a lower complication rate in the TEE group: 12.8% versus 29.4%. There were no differences in the follow-up regarding aortic regurgitation, aortic valve gradient and subsequent interventions.

CONCLUSIONS

In our experience TEE guided aortic valvuloplasty provides a shorter intervention with less fluoroscopy time and less number of balloon dilatations. The use of TEE is also related to smaller complication rates. We found great correlation between echocardiography and angiography in the measurement of the aortic ring.

Otherwise we have not found differences in the immediate and mid-term follow-up results between TEE and non-TEE guided aortic valvuloplasty.