The Aortic Valve Index as a predictor of a reoperation after Interrupted Aortic Arch (IAA) and Ventricular Septal Defect (VSD) one-stage surgery.

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Introduction:
IAA is a rare congenital defect of cardiovascular system often accompanied by VSD. The link between results of its early correction including the need of later re-treatment and diameter of aortic annulus could be analysed.

Material:
We analysed 28 children with IAA+VSD who underwent single-stage repair in 1996-2010. The mean age at the operation was 19.4 ± 7.4 days. 22 children (78.5 %) had IAA type B, 3 - A, 3 - C.

Methods:
Patients were divided into two groups based on preoperative echocardiographic measurements of aortic annulus size (AoV) [mm] and body weight (b.w.) [kg] The Aortic Valve Index (Hirata et al.) was calculated : AVI = AoV – b.w. In the group I there were 23 patients (82.1 %) with large aortic annulus (AVI > 1.5). Group II consisted of 5 patients with small aortic annulus (AVI < 1.5)

Results:
One neonate died in the early postoperative period.
9 patients (32.1%) aged 2 months to 3.2 years (with a mean age of 2.8 years) required re-operation or re-intervention.
5 patients (21.7%) of the group I required re-treatment: 2 - balloon angioplasty, 1 - resection of reCoA, 1 - VSD recanalization, 1 – reoperation for LVOTO and twice aortic arch angioplasty.
In group II 4 patients (all with IAA type B) required re-treatment: 2 patients underwent angioplasty of the aortic arch, one - angioplasty of the aortic arch, then reoperation for LVOTO and in the 10 year the Konno-Ross procedure with success. The last patient underwent balloon angioplasty of LVOTO and in the age of 5 years the Ross procedure. He died in the early postoperative period.

Conclusions:
Good medium-term results of one-stage repair of patients with IAA+VSD were found. Almost one-third of patients required re-treatment. In neonates with a relatively small aortic annulus mostly was necessary to perform re-intervention. In children with large aortic annulus, only some required re-intervention. The results indicate of a link between the aortic valve index and the need for re-operation.