

Stent implantation in aortic coarctation in children: ten year experience

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Aim

To report our experience on stent implantation in aortic coarctation (AC) in children.

Methods and patients

Between January 2000 and December 2010, 71 consecutive patients aged <18 years with AC had a percutaneous treatment in our institution (29 females; age 12.5 ± 3.7 years; weight 50 ± 20 kgs). Forty six subjects (65%) had a native AC while 25 (35%) had a recurrent AC (21 post-surgery, 6 post balloon angioplasty). Procedures were performed under general anesthesia. Bare stents (BS) were used in 37 patients, while covered stents (CS) in 34 subjects.

Results

Peak-to-peak gradient reduced significantly from 39 ± 12 mmHg to 6 ± 3 mmHg ($p < 0.001$). AC diameter increased significantly from $6 \pm$ mm to 14 ± 4 mm ($p < 0.001$). Fluoroscopy time was a median of 16 minutes (range 7-48 minutes). The median balloon to aortic coarctation ratio was 3 (range 1,5-6). Early complications occurred in 6 subjects (8%): death due to rupture of aorta in a 17 years old girl with aortic recoarctation associated with bicuspid aortic valve and aneurysm of the aorta (treated by using a Palmaz BS); artero-venous femoral fistula (1 pt); thrombosis of femoral artery treated by drugs (1 pt); stent embolization (2 pts treated with BSs); epileptic attack in one subject.

Early complications occurred more frequently in BS compared to CS (11% versus 5%; $p = 0.04$).

Subjects treated with CSs had tighter stenosis (4.8 ± 2 versus 7 ± 3 mm; $p = 0.001$) and needed larger sheath (median 12 versus 11 Fr; $p = 0.01$). There were no differences for other variables. Follow-up was a median of 5,5 years (range 1-10 years). Redilatation was needed due to somatic growth in 20 subjects (10 BS and 10 CS). In four subjects treated with BS another stent (CS) was implanted because of restenosis and development of aneurysm of the aortic wall. Ten CS were redilated successfully 1 to 4 years after the initial procedure. Ten subjects still need anti-hypertensive drugs at latest follow-up.

Conclusions

Percutaneous treatment by using stents in aortic coarctation is a safe and effective procedure. Introduction of CS allowed the reduction of risks and the treatment of tighter aortic coarctation.