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Long term antihypertensive medication after effective stent implantation in Aortic Coarctation

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Introduction:

Aortic coarctation (AoCo) patients frequently maintain hypertension. We assessed determinants of freedom from medication at long-term follow-up after stent implantation.

Methods:

We studied 75 patients with native AoCo and recoarctation who had undergone effective stent implantation with a follow up of 1 to 17 years. Medication, imaging measurements, Doppler and invasive data were studied.

Results:

Native coarctation was present in 47 patients (63%); median age at stent implantation was 25 (SD 15.4) years. Before stenting 66 patients (88%) were on antihypertensive therapy, with 41 (62%) on multiple drugs. Minimal diameter of coarctation was 6.6 (SD 3.7) mm, 25 patients (33%) had a diameter of transverse aorta/aorta at diaphragm level (Tao/DiaphAo) <0.8. Invasive gradients decreased from 42.6 (SD 22.1) mmHg to 5.1 (SD 7.2) mmHg. A second procedure was performed in 12 patients (16%) for multistage procedure (n=6), recoil (n=4), stent fracture, neointima hyperplasia. There were no major complications. At a mean follow up of 7.3 (SD 4.6) years, one patient died of stroke 4 years after the procedure.

Nine patients were not medicated before stenting and remained medication free at follow up. It was possible to discontinue at least one antihypertensive drug in 45 (60%) patients and 21 (28%) became medication free at late follow up. Logistic regression was used to determine predictors of freedom from medication. Patients who became or remained medication free were younger (23.0 versus 32.9 years, $p=0.011$), had a lower Doppler gradient (38.1 vs 52.8 mmHg, $p=0.01$), and lower invasive gradient before intervention (32 vs 49 mmHg, $p=0.004$). In patients with Tao/DiaphAo>0.8, 46% were medication free at last follow up, but with Tao/DiaphAo<0.8 only 20% did not require medication ($p=0.015$).

A multiple logistic regression model predicted freedom from medication using age, invasive gradient and Tao/DiaphAo>0.8 (AIC 82, $p<0.05$ in all β -coefficients).

Conclusions:

Percutaneous stent implantation in patients with coarctation reduces long term need for antihypertensive medication. Reintervention was required in 16% of the cases. Patients who became and/or remained medication free were younger at the time of stenting, with lower initial gradients and larger Tao/DiaphAo ratio.