

## **Evaluation of Cardiovascular Changes in Children with Aortic Coarctation Treated with Endovascular Stents**

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### Introduction (or Basis or Objectives):

Early and late effects of treatment of aortic coarctation with endovascular stents are not well known. In this study we aimed to investigate early effects of endovascular stent application on coarctation by evaluating blood pressure, vascular wall elasticity, carotid intima media thickness, serum NT-proBNP levels, left ventricular functions in children.

### Methods:

Fifteen patients who were diagnosed between February 2009-May 2010 and 30 healthy controls were included in this study. Left ventricular structure and functions were evaluated echocardiographically before, first and sixth months after stent placement. Elastic functions of aorta were assessed by systolic and diastolic diameters of aorta. In order to evaluate end organ damage carotid intima-media thickness was examined ultrasonographically. Left ventricular dysfunction was determined by serum biochemical plasma NT-proBNP levels. Blood pressures were recorded before and after stent application

### Results:

Mean age of patient group was  $10.5\pm 3.7$  and control group was  $9.6\pm 3.4$ . Systolic blood pressure before stent application was  $134.4\pm 16.3$  mmHg, one month after stent was  $114.5\pm 12.1$  mmHg and six months after was  $115.5\pm 9.5$  mmHg. Systolic blood pressures were significantly elevated before and after treatment. Mean pressure difference at coarctation side was  $29.5\pm 9.9$  mmHg before the procedure and  $5.7\pm 5.8$  mmHg after the procedure. There was a significant decrease in left ventricle indexes at first and six months after procedure. Elevated carotid intima-media thickness and aortic wall stiffness didn't decrease at first and sixth months after the procedure. Decreased aortic elasticity before the procedure didn't alter after the procedure. A significant negative correlation was detected between pressure difference at coarctation and aortic elasticity. High NT-proBNP levels before the procedure decreased significantly at sixth month.

### Conclusions:

In children with aortic coarctation, increase in left ventricular mass index, carotid intima media thickness, aortic wall stiffness and decrease in aortic elasticity were interpreted as signs of the presence of cardiac and vascular involvement. Six months after the repair of coarctation and control of hypertension, incomplete recovery of cardiovascular function suggests that patients should also be followed after the procedure.