ATHÉROSCLÉROSIS PROGRESSION IN ADULT POST-COARCTECTOMY PATIENTS

ACC Poster Contributions
Georgia World Congress Center, Hall B5
Sunday, March 14, 2010, 3:30 p.m.-4:30 p.m.

Session Title: Adult Congenital Heart Disease
Abstract Category: Adult Congenital Heart Disease
Presentation Number: 1119-401

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Background: Despite successful surgery of aortic coarctation, cardiovascular mortality and morbidity are increased in adult post-coarctectomy patients. Although the cause for this increased risk is thought to be multifactorial, an increased burden of atherosclerosis might be a reason. Carotid intima-media thickness (CIMT) assessed by non-invasive carotid ultrasound is a validated indicator of atherosclerosis. Recent studies have shown that adult post-coarctectomy patients have an increased CIMT in the carotid arteries compared to healthy controls. The aim of our study was to elucidate the process of arterial wall change over time in post-coarctectomy patients and unaffected controls.

Methods: In 42 successfully operated adult post-coarctectomy patients (26 males, mean age 37 ± 10 years, mean age at surgical repair 8 ± 6 years) carotid B-mode ultrasound scans were acquired in 2002 and 2008. CIMT of pre-coarctic right and left carotid conduits were determined. A subject’s CIMT was defined as the averaged measurements of three right and three left carotid arterial wall segments. We compared patient data with an age-matched control group. Patients were considered hypertensive with a mean daytime blood pressure ≥ 135 / 85 mmHg on ambulatory blood pressure monitoring.

Results: Baseline CIMT was significantly increased compared to healthy controls (p <0.001). A significant increase in CIMT during follow up (0.643 ± 0.12 mm vs. 0.669 ± 0.11 mm (p <0.001) e.g. (0.0043 mm/year) was found. However this increase in CIMT was similar to the increase over time in the healthy population (0.005 mm/year). 14 patients (33%) had hypertension at baseline and 20 patients had hypertension at the end of follow up. The contribution of hypertension and/or increase of lipid values to CIMT change in follow up between patients and controls could not be revealed. (all p >0.3)

Conclusion: After successful surgical repair CIMT in post-coarctectomy patients is increased. However in this longitudinal 6 year follow up CIMT increase over time is similar in patients and unaffected controls.

These findings indicate that surgery and blood pressure control in patients with aortic coarctation may normalize changes in CIMT over time.