

falls. Age, diabetes, hypertension, multiple co-morbidities and  $\geq 3$  antihypertensive medications use have been demonstrated to be risk factors in patients without primary autonomic dysfunction. Our study describes the prevalence, association with symptoms and risk factors for OH in medical, surgical and trauma wards in a tertiary hospital.

**Methods:** Seventy-six patients from four wards had resting supine and orthostatic blood pressures (BP) and pulse rates (PR) measured over four days.

**Results:** Patients' mean age was  $67.8 \pm 19.6$  years.

Wards	OH prevalence	95% confidence intervals
Overall	23.7%	14.7–34.8
Medical	21.2%	9.0–38.9
Surgical	31.8%	13.9–54.9
Trauma	19.0%	5.4–41.9

OH had no association with symptoms. OH negative (OHN) and positive (OHP) groups displayed different homeostatic behaviours. OHN group demonstrated statistically significant normal compensatory increases in BP and PR over time to orthostatic challenge. Instead, OHP group demonstrated statistically significant fall in BP over time to standing. They also failed to show compensatory increase in PR, suggesting underlying blunted autonomic responses. There were no differences in age, number of co-morbidities and medication use as risk factors between two groups.

**Conclusions:** OH is common and mostly asymptomatic. Routine measurements are required to detect cases. Patients with OH displayed altered intrinsic physiologic responses to standing rather than having significant associated risk factors. Further physiologic studies are needed to determine the clinical significance of this for more effective management of OH.

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### Primary Hypoplasia of Aortic Arch (phaa)—An Update

T. Goh\*

Monash Medical Centre, Australia

Primary Hypoplasia of Aortic Arch (phaa) has been linked with hypertension (hbp) in the young adult through the association of Ohm's and Poiseuille's law relating resistance to flow in the aorta. Four patients were described last year. This is an update.

**Aim:** To investigate phaa in young adults presenting with hbp.

**Method:** Four new patients with hbp over the last 12 months were investigated by CT/MRI of aortic arch (aa) after exclusion of renal causes. Segmental mea-

surements of aa were indexed to BSA as follows: (doi:10.1016/j.hlc.2008.05.474)

$$\text{Normalised Arch} = 14.56\text{BSA}^{0.543} \quad (1)$$

$$Z \text{ score(s.d.)} = 11.49(\ln[\text{arch}]\text{mm} - 0.543 \ln[\text{BSA}] - 2.678) \quad (2)$$

where  $Z < -2 = \text{phaa}$  and  $Z > -2 = \text{normal arch}$ .

BP > 130 mm Hg systolic = hbp.

**Results:** Two new patients with phaa were identified and are currently being observed before any decision is made for management.

Of the four original patients described: 1. Eighteen years previous double arch in infancy had aa stenting ( $Z -2.5$  to  $-0.5$ ) with settling of hbp 140/80 to 120/80 followup two years. 2. Fourteen years Turners syndrome with hbp 140/80 stented ( $Z -3$  to 0) followup 12 months bp 120/70. 3. Fifteen years with asymptomatic vascular ring noted phaa ( $Z -4.3$ ) early in childhood and developed hbp 174/71 at puberty. Awaiting treatment. 4. Twelve years post pda coil occlusion noted hbp 160/80 ( $Z -3.2$ ) awaiting management strategy.

**Conclusion:**

1. Primary Hypoplasia of Aortic Arch indexed has been recognised in 6/8 young adults with hbp. Arch measurements should be undertaken in young adults with hbp.
2. Aortic arch stenting has resulted in drop of hbp in two patients. this appears to be a potentially good method of treatment.
3. Observation of patients is necessary to ascertain best outcome strategies.

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### Reduced Exercise Tolerance in Patients with Increased Aortic Stiffness Assessed by 320-slice Computed Tomography

S. Hope\*, S. Seneviratne, S. Lockwood, J. Cameron

MonashHeart and Monash Cardiovascular Research Centre, Southern Clinical School, Australia

**Background:** Increased aortic stiffness is associated with decreased exercise capacity and adverse cardiovascular outcome. It improves prediction when added to conventional cardiovascular risk factors. Assessment of aortic stiffness by 320-slice cardiac computed tomography angiography (CTA) is feasible, but associations with exercise have not been previously explored.

**Methods:** All patients were identified who underwent Bruce protocol exercise stress testing and CTA with functional imaging within 90 days, between September 2008 and December 2010 (47 patients). Images were reconstructed at 10% phase intervals throughout the cardiac cycle. Aortic strain ((systolic area – diastolic area)/diastolic area) was calculated 5 cm distal to the plane of the aortic valve. Exercise testing was terminated