## 1131-80 Relation of Blood Pressure and Atherosclerosis Risk Factors With Thoracic Aortic Dimensions: A Population-Based Transesophageal Echocardiographic Study

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Background: The determinants of thoracic aortic dimensions have not been fully defined in the general population. Methods: Thoracic aortic dimensions (diameters at the sinuses of Valsalva [SV], ascending aorta [AA], aortic arch and descending aorta [DA]) were measured by transesophageal echocardiography in 373 subjects (median age 66 yr, range 51-101; 52% men) participating in a population-based study (Stroke Prevention: Assessment of Risk in a Community), who were free of significant aortic valve disease. The relationship between BP, additional atherosclerosis risk factors (including lipid levels) and aortic dimensions was examined. Results: Age, male gender and body surface area (BSA) were significant determinants of aortic diameters, jointly accounting for 41%, 31%, 38% and 47% of variability in size of SV, AA, arch and DA, respectively. Adjusting for age, gender and BSA: 1) Systolic BP was *negatively* associated with SV diameter (0.18 mm decrease [±0.09] per 10 mmHg; $P$=0.04) and pulse pressure was *negatively* associated with AA diameter (0.26 mm decrease [±0.12] per 10 mmHg; $P$=0.03); 2) BP was not related to arch size; 3) Diastolic BP and treatment with antihypertensive medications (a possible surrogate of hypertension severity) were positively associated with DA diameter (0.31 mm increase [±0.15] per 10 mmHg increase in diastolic BP, $P$=0.03; 0.66 mm increase [±0.27] in treated subjects, $P$=0.02); 4) In addition to BP - *higher* HDL-cholesterol (and higher apo A-I), *lower* triglycerides and *lower* apo-B (i.e. an "anti-atherogenic" lipid profile) were associated with greater AA size; smoking was associated with greater arch size; diabetes was associated with greater DA size (all $P$ values <0.05). However, each of these risk factors accounted for less than 2% of the variability in aortic dimensions (adjusting for age, gender and BSA). Conclusions: Age, gender and body size are significant determinants of thoracic aortic dimensions. Higher BP and additional atherosclerosis risk factors are associated with dilatation of distal, but not proximal, aortic segments, but the overall contribution of these atherosclerosis risk factors to aortic size is small.

## 1131-81 Primary Snoring, Systemic Blood Pressure, and Arterial Distensibility in Children

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Background: Snoring, believed to represent beginning of the sleep-disordered breathing continuum, occurs commonly in children. Whilst obstructive sleep apnoea, the opposite extreme, is associated with hypertension, potential effects of snoring on vascular functions have not been studied. We assessed the effects of primary snoring in children on arterial compliance and blood pressure.

Methods: Forty-two children with primary snoring, as defined by polysomnography demonstrating snoring but without apnoea or hypoventilation (apnoea-hypopnoea index of 1 or less per hour), were studied at a mean of 11.8 (SD 3.8) years, while 154 healthy children aged 6-18 years were studied as a control group. Arterial distensibiltiy was assessed by measuring pulse wave velocity (PWV, inversely related to distensibility) in the brachio-radial arterial segment. Blood pressure (BP) was measured by Dinamap. Data from the two groups were expressed as z scores (mean±SE) and compared. Univariate analysis was performed to determine contribution of each covariate to variability in PWV and systemic BP, while multiple regression was performed to identify determinants of PWV and BP.

Results: Compared with controls (z score 0.00±0.08), children with primary snoring had higher z scores of PWV (0.78±0.17, p<0.001), systolic BP (0.82±0.16, p<0.001), diastolic BP (0.87±0.17, p<0.001), mean BP (1.59±0.20, p<0.001), and a greater body mass index (21.1±0.91 vs 17.8±0.24, p<0.001). Although univariate analysis showed significant contributions of each of body mass index (p=0.002), snoring (p<0.001) systolic (p=0.039), diastolic (p=0.009), and mean (p<0.001) BP to variability in PWV, multivariate analysis identified snoring (p=0.044) as the only significant determinant. On the other hand, both univariate and multivariate analyses showed that age (p<0.001), body mass index (p<0.001), PWV (p=0.031) and snoring (p<0.001) were significant determinants of mean systemic BP.

Conclusions: Increased PWV, and hence reduced arterial distensibility, and increased BP occurred in children with primary snoring. These functional vascular abnormalities may increase cardiac afterload and prejudice later cardiovascular health.

## 1131-82 Association Between Pulse Pressure and C-Reactive Protein Among Healthy U.S. Adults

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**Background**: Evidence indicates that pulse pressure (PP) is positively associated with wear and tear of the artery wall and mononuclear cell adhesion. Such evidence suggests that elevations in PP may facilitate an inflammatory response which, in turn, might lead to initiation or progression of atherosclerosis and higher cardiovascular disease (CVD) risk. However, associations between PP and markers of systemic inflammation have not been investigated.

**Methods**: We examined the relationship between PP and C-reactive protein (CRP), a marker of systemic inflammation, among 9,867 apparently healthy U.S. adults who participated in the Third National Health and Nutrition Examination Survey (NHANES III). The multivariable-adjusted association between PP and an elevated CRP level (defined as >= .66 mg/dL) was assessed by logistic regression.

**Results**: A logistic regression model that adjusted for systolic blood pressure (SBP) , demographic factors, lipid levels, obesity, smoking status, alcohol consumption, and physical activity, showed that a 10 mm Hg increase in PP was associated with a statistically significant 15% increase in the odds of having an elevated CRP level (odds ratio 1.15; 95% CI 1.01-1.31; p = .04). When the same model was re-run controlling for diastolic blood pressure (DBP) instead of SBP, a 10 mm Hg increase in PP was associated with a significant 12% increase in the odds of having an elevated CRP level (odds ratio 1.12; 95% CI 1.04-1.22; p < .01). SBP and DBP were not related to CRP when PP was controlled for.

**Conclusion**: Increasing levels of PP are significantly associated with higher odds of having an elevated CRP level among apparently healthy U.S. adults. Low-grade inflammation may represent a mechanism through which pulse pressure increases CVD risk.

## 1131-83 Angiotensin Converting Enzyme Inhibitors and Angiotensin Receptor Blockers in Hypertensive African-Americans

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***Background:*** African Americans (AA) with hypertension are less responsive to blockers of the renin angiotensin system than Caucasian patients. The relative efficacy of ACEI and ARBs and the extent of cross resistance to these agents has not been adequately studied. The present trial was designed to compare the response rates of the ACEI enalapril (E) to the ARB candesartan (C), to assess if resistance to E predicts resistance to C and the effect of combination of the two.

***Methods:*** A total of 50 AA patients (pts) with stage I-II hypertension were enrolled. Following a 2-3 week washout period pts were randomly assigned to E 10 mg daily increased to 20 mg if blood pressure (BP) was not controlled or C 16 mg increased to 32 mg daily. At the end of this period and after a second washout, pts were crossed to the other treatement. Non-responders to E&C entered a third phase using combination of E 10 mg + C 16 mg increased to E 20 mg + C 32 mg daily. Responders were defined by a ≥10mmHg reduction in systolic BP (SBP) or ≥5mmHg in diastolic BP (DBP).

***Results:*** Of the 50 pts randomized , 44 completed this study (av age 60 yrs). Baseline BP averaged 148/100 mmHg, heart rate 74 BPM and body weight 204 lbs. Of these 44 pts, 11 pts(25%) responded to E by SBP and 19 pts(43%) by DBP. Only 7 pts (16%) responded by both SBP & DBP, whereas 21 pts (48%) were non-responders. With C therapy of the same 44 pts 13 (29%) responded by SBP , 20 pts by DBP and 12 pts (27%) by both SBP & DBP (P<.04, compared to E). In contrast only 6 pts (14%) responded to both E&C by both SBP & DBP. Of the 11 pts who responded to E by SBP only 6 ( 54%) responded also to C and of the 19 E responders by DBP 12 (64%) responded to C. Similarly of the 13 responders to C by SBP , 8(61%) also responded to E and of the 20 responders by DBP 12(60%) responded to E. Of the 44 pts 10 (23%) were controlled (SBP<140 & DBP<90 mmHg) with C and 6 pts(14%)with E (P<.001). Of the non-responders to either E or C , 25% responded to the combination of the two.

***Conclusions:*** In AA patients with stage I-II hypertension:1) treatement with C resulted in slightly higher response and control rates than E ; 2) Over 40% of pts who responded to E did not respond to C and vice versa; 3) The combination of C & E offers additional antihypertensive effect.

## 1131-84 Blood Pressure Control and Edema Rates in Older Patients With Hypertension and Osteoarthritis Following Treatment With COX-2 Specific Inhibitors

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**Background:** The effect of COX-2 specific inhibitors on SBP control and development of edema in hypertensive patients with osteoarthritis was assessed in a randomized, double-blind trial.

**Methods:** Hypertensive patients (N=1092) received either celecoxib 200 mg/d (n=549) or rofecoxib 25 mg/d (n=543) for 6 weeks. Changes from baseline in BP were determined in all patients. Changes in SBP and weight were evaluated in patients with significant edema. Significant edema was defined as change from baseline of 0-4+; initiate/increase medication to manage edema; increase of ±1 grade edema with 3% weight gain; or increase of ≥2 grades edema with/without weight gain.

**Results:** 62% patients were female, mean age 73 yrs. Significantly more rofecoxib patients than celecoxib experienced clinically important increases in SBP at any timepoint (14.9% vs 6.9%, $P$<0.001). New-onset or worsening edema occurred in significantly more patients in rofecoxib (25%) than celecoxib (18%) at any timepoint ($P$=0.008). For patients with significant edema, mean change in weight [cel: n= 26; 1.36±1.9 vs rof: n=42; 2.42±2.2; $P$=0.04] and in SBP [cel: 0.42±11.1 vs rof: 10.14±14.1; $P$=0.004] was significantly lower for celecoxib than rofecoxib.

**Conclusions:** Mean changes from baseline in SBP were higher in the rofecoxib group than in the celecoxib group for all patients. Furthermore, mean changes in SBP and weight were significantly higher in rofecoxib than celecoxib subgroups with significant edema.

**Overall Change in mean SBP (±SEM), mm Hg**

| | Celecoxib (n=549) | Rofecoxib (n=543) |
|---|---|---|
| **Week 1** | -0.6±0.5 | 1.7±0.5* |
| **Week 2** | 0.2±0.5 | 3.3±0.5* |
| **Week 6** | -0.5±0.5 | 3.0±0.5* |

*P<0.001