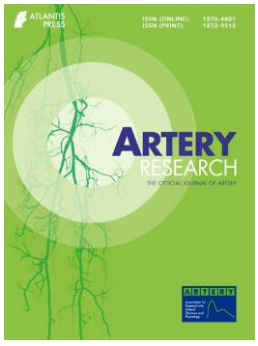

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P125: ESTIMATION OF MEAN ARTERIAL PRESSURE IN NON-INVASIVE STUDIES

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respectively). Carotid-radial PWV reliably declined only in the 1st group (from 9.5 ± 1.8 to 8.8 ± 1.1 m/s; p = 0.034).
Conclusion: Addition of rosuvastatin to a fixed lisinopril/amlodipine combination has proved to be more effective than lisinopril/hydrochlorothiazide plus rosuvastatin combination in terms of impact on central aortic systolic BP and carotid-radial PWV.

P123
UNATTENDED AND ATTENDED BP VALUES AND VASCULARE AND CARDIAC ORGAN DAMAGE

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It has been suggested that measurement of "unattended" blood pressure values may provide advantages over conventional BP measurement; some hypertension guidelines now suggest this approach as the preferred one for measuring office BP. Data on the relationship between unattended BP and cardiovascular events are less solid as compared to those obtained with attended BP; only few studies suggested that unattended BP might be more strictly correlated with hypertensive target organ damage than "attended" BP.
Aim: to evaluate the relationship between "attended" or "unattended" BP values and target organ damage in 261 subjects attending the outpatient clinic of an ESH-Excellence-Centre.BP values were measured by the physician with an automated oscillometric device (OmronHEM9000Ai, mean of 3 measurements),after 5 minutes of rest;thereafter,the patient was left alone and unattended BP was measured automatically after 5 minutes(3 measurements at 1 minute interval).
Results: mean age was 61 ± 16yrs, BMI 26.1 ± 4.2,60% female, 88% hypertensives (64% treated). Systolic unattended BP was lower as compared to attended SBP (130.1 ± 15.7 vs 138.6 ± 17.2 mmHg).Left ventricular mass index(LVMI) was similarly correlated with unattended and attended SBP(r = 0.132 and r = 0.133, p < 0.05,respectively). LVMI was similarly correlated with unattended and attended pulse pressure(PP)(r = 0.277 and r = 0.299, p < 0.05,respectively).Carotid IMT was significantly and similarly correlated with both attended and unattended BP values(CBMaxIMT:r = 0.172 and r = 0.153 for attended and unattended SBP, p < 0.05 and: r = 0.459 and r = 0.436 for attended and unattended PP, p<0.001).The differences between correlations were not statistically significant.
Conclusion: Measurement of BP "unattended" or "unattended" provides different values, being unattended BP lower as compared to attended BP. Our results suggest that attended and unattended BP values are similarly related with cardiac and vascular hypertensive target organ damage.

P124
CENTRAL BLOOD PRESSURE MEASUREMENT: PARADIGM SHIFT

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Introduction: It is estimated that currently 17 million deaths annually in the world occur due to cardiovascular disease (CV), about one third of all deaths. 9.4 million are related to arterial hypertension (HA). The use of methods that allow the early identification of structural and functional cardiovascular alterations can improve the strategy of treatment and control of these patients.
Description: LSO, 65 years old, female, white. Ringing in the ear and headache. Hypertension for 18 years and panic syndrome using Candesartan 8 mg, Fluoxetine 20 mg and Alprazolan 0.5 mg. In 06-2016, presenting blood pressure (BP):172 x 104 mmHg. Candesartan was elevated to 16 mg, initiating Rosuvastatin 10mg (C-reactive protein:16 and LDL-C:142), targeted improvement of lifestyle habits. ABPM 2 weeks after normal. Returned on 10-2017 with tachycardia and dizziness. She stopped Fluoxetine and Rosuvastatin. BP:178 x 84 mmHg. Reintroduced Fluoxetine and Rosuvastatin with new normal ABPM. Returned in 02-2018 with feeling of death, uneasiness and palpitations. BP:138 x 78 mmHg and normal ECG, in regular use of the medications. Accomplished non - invasive central blood pressure measurement (Mobil O'Graph) with arterial stiffness elevation, central AP:143 mmHg and augmentation index (AI):50 was performed. Felodipine -2.5 mg was started even with the new normal ABPM. 4 months later new measures with central BP:128 and AI = 33-table 1.
Conclusion: The treatment of HA depends on the choice of the drug and early onset with reduction of BP and CV outcomes 3,4. The central BP has greater relevance in the reduction of BP and cardiovascular outcomes than the peripheral BP 5,6. Keywords: Hypertension; Central Blood Pressure; Arterial Stiffness.

Table 1

EXAMES	06/2016	10/2017	02/2018	06/2018
SODIUM	142mg/dl	142mg/dl		
POTASSIUM	4,2 mg/dl	3,9 mg/dl		
UREA	39 mg/dl	36 mg/dl		
Creatine	1,25 mg/dl	1,09 mg/dl		
TSH	1,97	2,2		
C-reactive protein	16	0		
HEMOGRAM	NORMAL	NORMAL		
GLYCEMIA	71 mg/dl	94 mg/dl		
GLYCADA HEMOGLOBIN	6%	5%		
URIC ACID	3,9 mg/dl	3,5 mg/dl		
C. TOTAL	216 mg/dl	222 mg/dl		
LDL cholesterol	142 mg/dl	148 mg/dl		
ELECTROCARDIOGRAM	NORMAL	NORMAL	NORMAL	
DOPPLER OF CAROTIDAS	NORMAL			
ECHOCARDIOGRAM	NORMAL	NORMAL		
Central Blood Pressure			VOP=10, AI=50, PC=142, PP=155x92	VOP=9,5, AI=33, PC=128, PP=136x98
ABPM	Vigília:125x77 Sono:113X71	Vigília:125x77 Sono:113X71		

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P125
ESTIMATION OF MEAN ARTERIAL PRESSURE IN NON-INVASIVE STUDIES

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Background: Mean arterial pressure (MAP) is required for many hemodynamic calculations. Most automated devices do not report MAP and a form factor (FF) is used to estimate it from systolic and diastolic blood pressure (BP). The appropriate choice of FF in the brachial artery is controversial: 0.33 is the traditional value, but invasive measurements report a value of 0.4. [1] Non-invasive studies have provided some support for FF = 0.4 but have usually not measured MAP directly, nor used brachial blood pressure waveforms, or accounted for BP measurement errors. We addressed these issues in a sample of white Europeans drawn from the Southall and Brent Revisited study.
Methods: BP was measured using a Pulsecor device (USCOM). Form factors (FFosc and FFwave) were calculated as (MAP-diastolic BP)/(systolic BP-diastolic BP) using MAPosc calculated by oscillometry and MAPwave calculated as the waveform mean respectively.
Results: Data are mean ± SD of 527 observations (Table 1). FFosc was lower than FFwave and use of FF = 0.4 (MAP0.4) overestimated MAPosc. Allowing for measurement errors based on [2-3] gave estimates of MAPwave that were more similar to MAPosc.
Conclusions: Measurement errors confound estimation of MAP using FF. Measurement errors vary substantially between devices [4] precluding a single FF for all studies. Non-invasive MAP should be estimated by oscillometric methods.

Variable	Mean	SD
Age, years	69.1	6.2
Male sex, n (%)	416	(78.9)
Systolic BP, mmHg	141.3	16.2
Diastolic BP, mmHg	84.9	10.4
MAP_{osc}, mmHg	100.7	10.6
MAP_{wave}, mmHg	105.3	11.6
Heart rate, min^{-1}	65.8	11
FF_{osc}	0.28	0.02
FF_{wave}	0.36	0.04
$MAP_{0.4}$, mmHg	107.5	

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Poster Session II — Models, Methodologies and Imaging Technology II

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THE ASSOCIATION OF THE INTEGRATED CENTRAL PRESSURE-STIFFNESS RISK SCORE WITH CARDIOVASCULAR MORTALITY IN HEMODIALYSIS PATIENTS

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Background: Our aim was to study the predictive power of ICPS risk categories on CV mortality in hemodialysis patients.
Methods: In our retrospective cohort study 91 patients were involved from two dialysis centers. Pulse Wave Velocity (PWV), central systolic blood pressure (cSBP) and and central pulse pressure (cPP) were measured with tonometric method, patients were followed for a median of 29.5 months and CV mortality was registered. Patients were classified into tertiles based on their PWV, cSBP and cPP values. After the analysis of the predictive values of the tertiles of the identical parameters, patients were scored. One score was given, when a patient had a third tertile value of cSBP or a second or third tertile value of PWV or cPP. Then the CV outcome was analyzed with Cox regression analysis of the groups of patients with different ICPS scores and three ICPS risk categories were defined: average (0-1 point), high (2 points) and very high (3 points).
Results: During follow-up 31 events occurred. After adjustment for multiple factors, compared with the average ICPS risk category group (n = 35; 38%), those, who were in the high risk group (n = 33; 30%) showed a tendency for significantly higher hazard ratio (HR) of CV mortality (HR = 2.62, 95% confidence interval (CI):0.82—8.43), while patients in the very high ICPS risk category (n = 23; 21%) had a markedly increased risk (HR = 10.03, CI:1.67—60.42).
Conclusions: The ICPS risk categories can help in the identification of hemodialysis patients with high CV risk.

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SPATIAL VARIATION OF RESERVOIR PRESSURE IN CHILDREN ASSESSED WITH HIGH FIDELITY PRESSURE MEASUREMENT IN FIVE AORTIC LOCATIONS

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Objective: To assess whether reservoir pressure (Pres) in young individuals with a compliant aorta is uniform throughout the aorta, as has recently been reported in older adults with cardiovascular disease (1).
Methods: High fidelity pressure was measured with a Verrata wire (Philips Volcano) in 5 aortic locations (ascending-to-abdominal) via pull-back in 11 children with a normal aorta (age 10.4 ± 4.9 years, mean ± SD). Pres was calculated using the 'pressure-only' approach (2), with exponential fitting over the whole of diastole (1) (WholeDia) or the period when pressure declined in an approximately exponential fashion (ExpDia).
Results: ExpDia produced a better fit than WholeDia (R2 = 0.99 ± 0.01 vs 0.91 ± 0.11, $P < 0.001$). P_{res} amplitude (ΔP_{res}) in the ascending aorta from WholeDia fitting (12.0 ± 4.1 mmHg) was less than with ExpDia fitting (19.0 ± 5.2, P = 0.001). The zero-flow asymptotic pressure (P_{inf}) obtained from the fitting procedure was negative (non-physiological) in 76% (WholeDia) and 44% (ExpDia) of recordings, but fixing P_{inf} to 37 mmHg (average of physiological values) had little effect on the resulting ΔP_{res}. ΔP_{res} varied by 5.7 ± 3.0 mmHg (WholeDia) and 7.3 ± 3.7 mmHg (ExpDia) between aortic locations (both $P<0.001$ compared with zero), corresponding to 44% ± 30% and 38% ± 17% of average ΔP_{res} respectively. Maximum instantaneous spatial differences in P_{res} amounted to a substantial percentage of ΔP_{res} (45% ± 37% WholeDia; 24% ± 26% ExpDia) and were not reduced by time and/or pressure offsets to align P_{res} foot.
Conclusion: In young individuals, P_{res} was sensitive to the fitting period and often resulted in non-physiological P_{inf} values. Regardless of calculation method or alignment, P_{res} was not uniform along the aorta.

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RADIAL INTIMA-MEDIA THICKNESS ASSESSMENT BY ULTRA-HIGH FREQUENCY ULTRASOUND AND AUTOMATED IMAGE-ANALYSIS IN HEALTHY VOLUNTEERS

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Background: Ultrahigh-frequency ultrasound may represent a powerful tool for investigating the arterial properties of medium and small-size arteries. Aim of this study was: 1) to evaluate intra- and inter-operator reproducibility of radial artery vascular parameters (intima-media thickness —IMT- and diastolic diameter -DD), obtained both with a manual and an automatic approach; 2) to identify physiological correlates of radial IMT.
Methods: 40 healthy subjects were examined by Vevo MD (FUJIFILM, VisualSonics, Toronto, Canada); in 11 volunteers two B-mode clips (longitudinal view) of the radial artery were acquired for each subject by two skilled operators. IMT DD were measured manually and using an automatic software (Cardiovascular Suite, QUIPU, Pisa, Italy). Coefficient of variations (CV) and Bland-Altman analysis were employed.