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SIMULTANEOUS INVASIVE AND NONINVASIVE MONITORING OF CENTRAL BLOOD PRESSURE ON CRITICALLY ILL PATIENTS SUFFERING FROM CARDIOGENIC SHOCK TREATED WITH IABP

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Intraaortic balloon counterpulsation (IABP) is a method of temporary mechanical circulatory support in patients suffering from cardiogenic shock to improve the balance of myocardial oxygen supply and demand by using systolic unloading and diastolic augmentation. Arteriograph is an invasively validated oscillometric device which measures central blood pressure (SBPao) noninvasively.

The recently developed Arteriograph24 is a combination of a 24-hour BP-monitor and a single-measurement Arteriograph which provides both 24-hour peripheral and central BP profile. Comparison of simultaneous invasive measurements by IABP and noninvasive ones by Arteriograph of SBPao was never published yet.

Aim: The aim of this work was to compare the SBPao values measured with these two modalities.

Subjects and method: 11 severely ill patients placed on IABP were included into this study. Noninvasive monitoring of SBPao was carried out by Arteriograph24 simultaneously with IABP. Descriptive statistics were calculated for both measurements and the variables were indicated as means and standard deviations. Linear regression analysis was carried out to define the relationship between the invasive and noninvasive variables.

Results: A strong and linear correlation was found between the invasive and non-invasive SBPao values, Pearson's correlation coefficient was $R = 0.76$; $p < 0.001$.

The diastolic counterpulsation pressure waves could be correctly identified on Arteriograph-registrations. Furthermore, the onset and the end of counterpulsation were also exactly defined noninvasively.

Conclusions: The noninvasive SBPao values showed strong correlation with invasive values. Our results confirm that the SBPao values, measured by Arteriograph, are close to the true aortic SBP. This is the first investigation when Arteriograph24 is validated against invasive SBPao measurement by IABP.

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ARE HEMODYNAMIC MEASURES ASSOCIATED WITH FRAILITY IN ELDERLY PATIENTS UNDERGOING TRANSCATHETER AORTIC VALVE IMPLANTATION?

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Background: Aortic valve stenosis (AS) is common in the elderly and is associated with high morbidity and mortality, and leads to functional decline. The aim of this study was to investigate the possible relation between aortic stiffness, AS and frailty in older patients undergoing Transcatheter Aortic Valve Implantation (TAVI).

Methods: TAVI Care&Cure is an observational ongoing study including consecutive patients undergoing TAVI procedure at the Erasmus University Medical Center. Prior to TAVI echocardiography was performed and aortic stiffness was measured non-invasively by the Mobil-O-Graph. The frailty status was assessed including 5 domains. Primary outcome was to investigate the relationship between structural and functional cardiovascular parameters and frailty status. Linear regression was used.

Results: A total of 212 patients were included for analysis. Mean age was 79.2 years (± 7.8), 52.7% men, mean Aortic Valve Area (AVA) was 0.73 (± 0.3),

mean Pulse Wave Velocity was 12.6 (± 1.5). Frailty was found in 57.8%. Peripheral pulse pressure ($p = 0.04$) and central pulse pressure ($p = 0.02$) but not aortic stiffness were associated with AS severity. AVA was associated with frailty ($p = 0.02$) whereas measures of aortic stiffness were not.

Conclusion: Aortic valve area but not measures of aortic stiffness is associated with frailty status in elderly patients with AS undergoing a TAVI procedure.

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DAPAGLIFLOZIN ACUTELY RESTORES ENDOTHELIAL DYSFUNCTION, REDUCES AORTIC STIFFNESS AND RENAL RESISTIVE INDEX IN TYPE 2 DIABETIC PATIENTS: A PILOT STUDY

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Objective: Sodium-glucose co-transporter-2 inhibitors reduce blood pressure and renal and cardiovascular events in patients with type 2 diabetes through not fully elucidated mechanisms. Aim of this study was to investigate whether dapagliflozin is able to acutely modify systemic and renal vascular function.

Methods: Neuro-hormonal and vascular variables, together with 24h-urinary sodium, glucose, isoprostanes, diuresis and free-water clearance, were assessed before and after a 2-day treatment with dapagliflozin 10 mg/die in 16 type 2 diabetic patients. Brachial artery endothelium-dependent and independent vasodilation (by flow-mediated dilation) and pulse wave velocity were assessed. Renal resistive index was obtained at rest and after glyceril trinitrate administration.

Results: Dapagliflozin decreased systolic blood pressure and urinary isoprostanes and induced an increase in 24h-diuresis, 24h-urinary glucose and serum magnesium; 24h-urinary Na and fasting blood glucose were unchanged; serum magnesium slightly increased. Flow-mediated dilation was significantly increased (2.8 ± 2.2 to $4.0 \pm 2.1\%$, $p < 0.05$), and pulse-wave-velocity was reduced (10.1 ± 1.6 to 8.9 ± 1.6 m/s, $p < 0.05$), even after correction for mean blood pressure. Renal resistive index was reduced (0.62 ± 0.04 to 0.59 ± 0.05 , $p < 0.05$), as well as its response to nitrates.

Conclusions: An acute treatment with Dapagliflozin significantly improves systemic endothelial function, arterial stiffness and renal resistive index; this effect is independent of changes in blood pressure and occurs in the presence of stable natriuresis, suggesting a fast, direct beneficial effect on the vasculature, possibly mediated by oxidative stress reduction.

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EFFECT OF CHRONIC INFLAMMATION INHIBITION WITH SALSALATE ON AORTIC STIFFNESS AND VASCULAR ENDOTHELIAL FUNCTION IN OLDER ADULTS: A RANDOMIZED CONTROLLED STUDY

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Chronic activation of the proinflammatory transcription factor nuclear factor kappa-B (NFkB) is linked to age-associated vascular dysfunction. Acute inhibition of NFkB with high-dose salsalate (>4g), a non-acetylated salicylate known to block NFkB activation, improves aortic stiffness and endothelial function in aged rodents and humans.

Therefore, we hypothesized that chronic salsalate therapy at the US FDA approved starting dose (3 g/day) would improve age-associated aortic stiffness and endothelial dysfunction in older adults. A total of 28 normotensive older adults (57.4 ± 1.3 yrs; 11M/13F) were randomized to salsalate 3 g/day ($n = 14$) or placebo ($n = 14$) for 4 weeks and had assessments of aortic stiffness (carotid-femoral pulse wave velocity, CFPWV) and endothelial function (brachial artery flow-mediated dilation, FMD).

A group of 17 young adults (age 26 ± 1 yrs) were not randomized. As expected, baseline CFPWV was higher (8.1 ± 0.3 vs 5.3 ± 0.2 m/sec, $P < 0.01$) and FMD was lower (3.4 ± 0.8 vs $5.9 \pm 1.0\%$, $P = 0.03$) in the older vs.