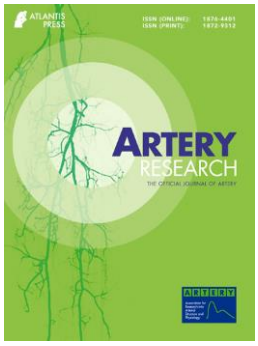

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P170: SHORT-TERM EFFECTS OF TRANSCATHETER AORTIC VALVE IMPLANTATION ON AORTIC FUNCTION AND HEMODYNAMICS

Dimitrios Terentes-Printzios, Charalambos Vlachopoulos, Konstantinos Toutouzas, Georgios Latsios, Andreas Synetos, Georgios Trantalis, Fani Mitropoulou, Maria Drakopoulou, Konstantinos Stathogiannis, Vicky Penesopoulou, Konstantinos Kalogeras, Konstantino

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NT during hand skin heating with saline, L-NMMA, fluconazole, or both inhibitors infusion. AWV was estimated by the ratio of the area of the hysteresis loop of the pressure-diameter relationship (W_V, viscous energy dissipated) to the area under the loading phase (W_E, elastic energy stored).

Results: During saline infusion, W_V, W_E and W_V/W_E were not modified after heating in NT whereas W_V/W_E increased in HT ($39.3 \pm 12.0\%$ to $49.9 \pm 7.7\%$, $p < 0.05$) due to a larger increase in W_V than W_E (ΔW_V: $+41.5 \pm 27.6\%$ vs. ΔW_E: $+25.1 \pm 28.4\%$, $p < 0.05$). With all inhibition sequences, W_V/W_E increased after heating in NT ($p < 0.05$) due to a larger increase in W_V than W_E ($p < 0.05$). In HT with fluconazole, L-NMMA and L-NMMA + fluconazole, W_V/W_E increased after heating ($p < 0.05$) due to a larger increase in W_V than W_E ($p < 0.05$), similarly to saline infusion. In all conditions, increase in shear stress was similar between NT and HT.

Conclusion: NO and EETs maintain stable AWV during change in flow in NT, and this regulation is lost in HT resulting in an increased AWV after heating.

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P170
SHORT-TERM EFFECTS OF TRANSCATHETER AORTIC VALVE IMPLANTATION ON AORTIC FUNCTION AND HEMODYNAMICS

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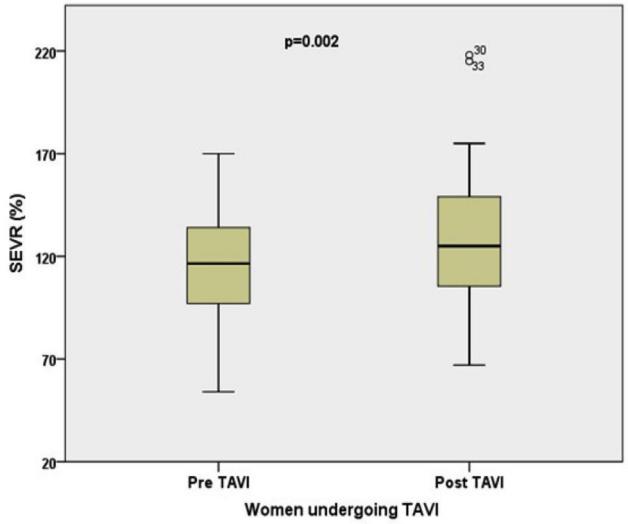
Purpose/Background/Objectives: Aortic stiffness and hemodynamics are independent predictors of adverse cardiovascular events. Transcatheter aortic valve implantation (TAVI) is growingly used in elderly patients with aortic stenosis. We sought to investigate the effect of TAVI upon aortic vascular function and hemodynamics as well as the interplay between genders.

Methods: Twenty high-risk patients (mean age 82.2 ± 5.3 years, 13 female) with severe symptomatic aortic stenosis undergoing TAVI were included. Aortic stiffness was estimated through carotid-femoral pulse wave velocity (PWV). Aortic hemodynamics (aortic pressures, aortic augmentation index [AIx]) and subendocardial viability ratio (SEVR) were measured with Sphygmocor. Measurements were conducted prior to the implantation and at discharge.

Results: PWV prior to the implantation was 8.6 ± 1.5 m/s and aortic AIx $= 33.0 \pm 14.0\%$ for the overall population. There was no statistically significant change in peripheral or aortic pressures as well as on aortic stiffness after implantation of TAVI. However, there was a marginally non-significant trend for an increase in SEVR (116 ± 28 vs $131 \pm 40\%$, $p = 0.067$). Results to the male population were similar to the overall population.

Conversely, in the female population, there was a significant increase in PWV after TAVI (8.4 ± 1.2 m/s vs $8.9 \pm 1.3\%$ with $p = 0.034$, respectively). Furthermore, there was a significant increase in SEVR after TAVI (107 ± 28 vs $125 \pm 24\%$ with $p = 0.002$, respectively). All other variables did not change significantly in the female population.



Conclusion: Our study shows that shortly after TAVI female subjects experience an increase in aortic stiffness with an improvement of myocardial perfusion. These findings further elucidate the short-term hemodynamic consequences of aortic valve repair.

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COMPLIANCE OF EXTREMELY DILATED MAIN PULMONARY ARTERIES IN PULMONARY ARTERIAL HYPERTENSION

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Background: Main pulmonary artery (MPA) dilation is a radiological sign of pulmonary hypertension (PH) and is an independent risk factor of sudden death (Żyłkowska et al, Chest 2012). Extreme MPA dilation is a rare consequence of PH. We hypothesize that the main pulmonary artery compliance is larger and contributes more to total arterial compliance in PH patients with an extremely dilated MPA when compared to patients with a less dilated MPA.

Methods: Cardiac magnetic imaging (CMR) scans of idiopathic and hereditary pulmonary arterial hypertension (PAH) patients were retrospectively analyzed. Six PAH patients with extremely dilated MPAs ($\geq$45 mm diameter on transverse plain CMR images of the MPA) and six PAH patients with MPA diameter $<$45 mm were included. Total pulmonary arterial compliance (C_{tot}) was calculated by stroke volume (SV) over pulse pressure (PP) and MPA compliance (C_{MPA}) by (Δarea*length)/PP (length was assumed 5 cm for all MPAs). C_{MPA}/C_{tot} ratio could therefore be calculated by CMR derived flow images alone: $C_{MPA}/C_{tot} = (\Delta\text{area*length})/SV$.

Results: Mean age in both groups was not different, mean pulmonary artery pressure was higher in patients with an extremely dilated MPA (73 ± 9.0 mmHg) compared to patients with non-extremely dilated MPA (48 ± 5.4 mmHg, $p = 0.02$). A trend toward a higher C_{MPA}/C_{tot} ratio was observed in patients with extremely dilated MPA ($p = 0.0534$).

Conclusion: In PAH the contribution of the MPA to total compliance tends to be higher in patients with a MPA diameter $\geq$45 mm then in patients with a diameter $<$45mm.