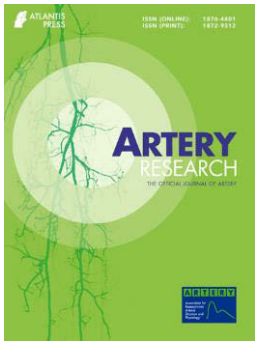

Artery Research

ISSN (Online): 1876-4401 **ISSN (Print): 1872-9312**
Journal Home Page: https://www.atlantis-press.com/journals/artres

P10: LOSS OF ENDOTHELIUM-DEPENDENT REGULATION OF ARTERIAL WALL VISCOSITY IN ESSENTIAL HYPERTENSION

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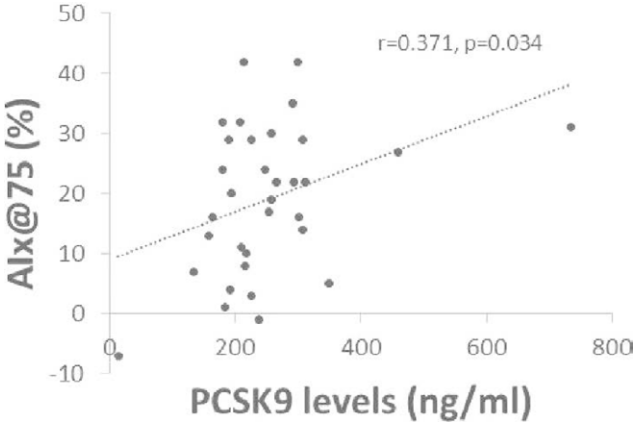
To cite this article: Frederic Roca, Jeremy Bellien, Michele Lacob, Robinson Joannides (2017) P10: LOSS OF ENDOTHELIUM-DEPENDENT REGULATION OF ARTERIAL WALL VISCOSITY IN ESSENTIAL HYPERTENSION, Artery Research 20:C, 64–64, DOI: https://doi.org/10.1016/j.artres.2017.10.063

To link to this article: https://doi.org/10.1016/j.artres.2017.10.063

Published online: 7 December 2019

of this pilot study was to determine if PCSK9 levels are associated with aortic elastic properties in patients with familial dyslipidemia.
Methods: Thirty-three patients with familial dyslipidemia (mean age 45 ± 12 years, 21 men, 14 with heterozygous familial hypercholesterolemia and 19 with familial combined hyperlipidemia) without known cardiovascular disease were enrolled. PCSK9 levels were measured with ELISA. Aortic stiffness was assessed with carotid-femoral pulse wave velocity (cfPWV) and wave reflections were assessed with aortic augmentation index corrected for heart rate (AIx@75). High-sensitivity C-reactive protein (hsCRP) levels were determined as a marker of subclinical inflammation.
Results: There was a positive correlation between AIx@75 and PCSK9 levels ($r = 0.371$, $p = 0.034$). (Figure) No association was found between levels PCSK9 and cfPWV ($r = 0.043$, $p = 0.813$) or hsCRP ($r = 0.199$, $p = 0.274$). In multivariate regression analysis, after adjustment for potential confounders such as age and sex, AIx@75 showed a significant positive correlation with PCSK9 levels (Adjusted $R2 = 0.23$, $p = 0.007$). Even after further adjustment for possible confounders such as the type of familial dyslipidemia, low-density lipoprotein levels, cfPWV and hsCRP this association remained statistically significant (Adjusted $R2 = 0.16$, $p = 0.03$). Gender was also significantly associated with levels of PCSK9 ($p = 0.029$).



Conclusions: In a group of patients with familial dyslipidemia PCSK9 levels were positively associated with wave reflections but not aortic stiffness.

P9
THE PARTICIPATION OF NITRIC OXIDE AND HYDROGEN SULPHIDE SIGNALISATION IN VASOACTIVE RESPONSES OF RAT THORACIC AORTA IN CONDITION OF DEVELOPED SPONTANEOUS HYPERTENSION

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Our previous study in young spontaneously hypertensive rats (SHR) confirmed a participation of nitric oxide (NO) and hydrogen sulphide (H_2S) in probably inherent adaptive strategy of conduit arteries in condition of sustained hypertension. The aim of study was to confirm or refuse the compensatory mechanisms in developed phase of hypertension in SHR with an emphasis on manifestation of the NO and H_2S signalisations.
In the experiments 17–20-weeks-old normotensive Wistar rats and SHR were included. Systolic blood pressure (sBP) was measured by plethysmographic method and vasoactivity of isolated thoracic aorta (TA) was recorded by sensors of changes of isometric tension.
We observed an increased sBP and hypertrophy of myocardium in SHR. The contractile response of TA to exogenous noradrenaline was reduced in SHR due to inhibition effect of endogenous NO. In SHR impaired endothelial functions were confirmed, however through a prevalence of vasoconstrictors produced by cyclooxygenase but not as a result of reduced NO synthesis. Dual effect of H_2S donor (Na_2S) was showed in both strains; however an increased maximal vasorelaxation was proved in SHR. Moreover, acute inhibition of NO production increased the relaxant phase of Na_2S effects. On the other hand, application of Na_2S modulatory dose increased the release of NO from exogenous NO donor, nitrosogluthation in Wistar rats but not in SHR.
The data confirmed that SHR disposed with adaptive mechanisms including NO and H_2S systems and their interaction (acute NO deficiency potentiated vasorelaxant effect of H_2S). These effects could provide compensation of the increased vascular tone in adulthood.

Reference
Supported: VEGA 2/0074/14, APVV-15-0565, APVV-15-037, Grant of Slovak Society of Cardiology.

P10
LOSS OF ENDOTHELIUM-DEPENDENT REGULATION OF ARTERIAL WALL VISCOSITY IN ESSENTIAL HYPERTENSION

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Background: Nitric oxide (NO) and epoxyeicosatrienoic acids (EETs) regulate arterial wall viscosity (AWV) in young subjects (1). During hypertension, characterised by a decrease in endothelium-derived NO and an early disappearance of EETs, AWV is not modified (2,3). We compared the role of NO and EETs in the regulation of AWV in 18 middle-age untreated hypertensive patients (HT) vs. 14 matched normotensive controls (NT).
Methods: Radial artery diameter and pressure were measured before and after infusion of L-NMMA, fluconazole or both. AWV was estimated by the ratio of the area of the hysteresis loop of the pressure-diameter relationship (WV, viscous energy dissipated) to the area under the loading phase, bounded by pulse pressure and diameter (WE, elastic energy stored).
Results: At baseline, WV and WE were higher in HT than in NT (WV: 0.71 [0.65–1.19] vs. 0.45 [0.40–0.62] $mmHg.mm^2$, $p < 0.05$; WE: 1.99 [1.45–2.61] vs. 1.09 [0.96–1.54] $mmHg.mm^2$, $p < 0.01$) but WV/WE were similar (40.3 ± 7.1% vs. 40.5 ± 5.9%). In NT, fluconazole and L-NMMA decreased diameter, but did not modify WV, WE and WV/WE. L-NMMA + fluconazole decreased diameter and increased WV/WE (38.9 ± 8.5% to 47.5 ± 8.9%, $p < 0.05$) due to an increase in WV (+27.1 ± 57.5%) as compared to WE (−1.3 ± 27.8%) ($p < 0.05$). In HT, whereas fluconazole had no effect on diameter, WV and WE, LNMMA and LNMMA + fluconazole decreased these parameters ($p < 0.05$) without change in WV/WE.
Conclusion: In NT, NO and EETs regulate AWV of conduit arteries. Conversely, in HT associated to an increased elastic energy stored, NO regulates elastic work but not AWV that remains stable. Whether this represents an optimal adaptation remains to be investigated.

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