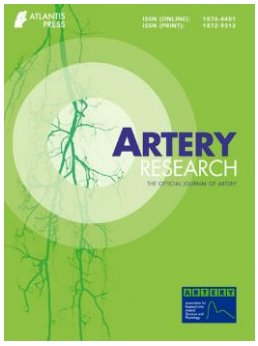

Artery Research

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

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To cite this article: Florence Lamarche, Mohsen Agharazii, Francois Madore, Remi Goupil (2017) 1.1: CENTRAL BLOOD PRESSURE, STATINS AND LDL-CHOLESTEROL: A MEDIATION ANALYSIS, Artery Research 20:C, 47–47, DOI: https://doi.org/10.1016/j.artres.2017.10.015

To link to this article: https://doi.org/10.1016/j.artres.2017.10.015

Published online: 7 December 2019

Artery Research (2017) 20, 47–61

Available online at www.sciencedirect.com

ScienceDirect

journal homepage: www.elsevier.com/locate/artres

Oral presentation abstracts

Oral session I – Epidemiology

1.1
CENTRAL BLOOD PRESSURE, STATINS AND LDL-CHOLESTEROL: A MEDIATION ANALYSIS

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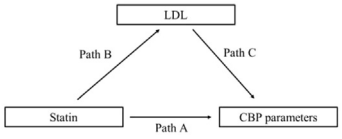
Background: Central blood pressure (CBP) is a better predictor of cardiovascular burden than peripheral blood pressure (BP). While studies have suggested a reduction in peripheral BP with statins, it remains uncertain to what extent statins reduce CBP and whether this reduction is mediated through a decrease in LDL-cholesterol (LDL).
Methods: Of the 20,004 CARTaGENE participants, 17,011 had CBP and LDL measurements (n = 13,439 without, n = 3,133 with statins). Linear and logistic regression analyses were used to evaluate the association between CBP, LDL and statin use (after stratification for treatment indication for the latter). The impact of LDL on the association between statin use and CBP was determined by mediation analyses. All analyses were adjusted for age, sex, diabetes, cardiovascular disease, smoking, eGFR, BMI, uric acid, heart rate, anti-hypertensive agents and aspirin.
Results: Lower levels of LDL were associated with lower systolic and diastolic CBP in participants treated with (b = 0.098 and 0.125; p < 0.001) and without statins (b = 0.089 and 0.105; p < 0.001). Statin use as primary prevention (per ACC/AHA guidelines; n = 8,865) was also associated with lower systolic CBP, diastolic CBP and central pulse pressure (b = −0.091, −0.073 and −0.055; p < 0,001). Mediation analyses demonstrated that 15%, 46% and -22% of these effects were achieved through the concomitant changes in LDL (Table 1). In secondary prevention (n = 995), statins use was not associated with lower CBP, although the small sample size may lack power.
Conclusion: In this populational cohort, statin use as primary prevention is associated with lower CBP. These changes are mediated directly by statins but also indirectly through effects on LDL.



	Path A (total effect)	Path A (direct effect)	Path BC (indirect effect)	Percent mediation
Systolic CBP	-3.0 (-3.8, -2.3)	-2.6 (-3.4, -1.7)	-0.5 (-0.2, -0.0)	15%
Diastolic CBP	-1.7 (-2.2, -1.2)	-1.0 (-1.5, -0.4)	-0.8 (-1.0, -0.5)	44%
Central pulse pressure	-1.3 (-1.8, -0.9)	-1.6 (-2.2, -1.1)	0.3 (0.0, 0.6)	-22%

Effects represent changes of CBP parameter per 1 standard deviation of LDL (95% CI).

1.2
MASKED HYPERTENSION IS REVEALED BY EXAGGERATED SUBMAXIMAL EXERCISE BLOOD PRESSURE AMONG ADOLESCENTS FROM THE AVON LONGITUDINAL STUDY OF PARENTS AND CHILDREN (ALSPAC)

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Objectives: Masked hypertension (MH) is associated with hypertension-related markers of organ damage, but is undetectable by clinic (resting) BP. Exaggerated systolic BP response to submaximal exercise reveals MH in adults, but it is unknown whether this is the case during adolescence. We aimed to determine if exercise BP was raised in adolescents with MH, and associations with markers of organ damage.
Methods: 585 adolescents (aged 17.7 ± 0.3 years; 41.9% male) from the Avon longitudinal study of parents and children (ALSPAC), completed a step-exercise test with post-exercise BP, resting (clinic) BP and 24-hour ambulatory BP (ABP). MH was defined on the basis of guideline adult thresholds as clinic BP ≤ 140/90 mmHg and 24 h ABP ≥ 130/80 mmHg, or paediatric thresholds (age, sex and height percentiles). Assessment of markers of organ damage including left-ventricular mass (LVM) and carotid-femoral pulse wave velocity (PWV) was also undertaken.
Results: 45 (7.7%) participants were classified with MH. Resting and post-exercise SBP were higher in those with MH vs. normotensives (126.1 ± 7.3 mmHg vs. 114.7 ± 10.0 mmHg, $p < 0.001$; 152.2 ± 17.3 vs 141.1 ± 15.1 mmHg, $p = 0.001$). A post-exercise SBP threshold of 150 mmHg revealed MH (AUC = 0.69, 95% CI: 0.61–0.76, $p < 0.001$) and was associated with greater LVM index (30.2 ± 6.5 vs. 27.6 ± 5.8 g/m$^{2.7}$, $p < 0.001$) and PWV (5.9 ± 0.6 vs. 5.7 ± 0.7 m/s, $p = 0.01$).
Conclusions: This is the first study within adolescents demonstrating post-exercise SBP can reveal MH and an association with markers of organ damage. Exaggerated exercise BP might be a warning signal of underlying high BP and increased cardiovascular risk undetected by clinic BP.

1.3
DETERMINANTS OF CENTRAL AND PERIPHERAL PULSE PRESSURE IN A POPULATION OF HEALTHY ADOLESCENTS. THE MACISTE STUDY

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We aimed at evaluating the anthropometric and hemodynamic factors associated with central pulse pressure (cPP), peripheral pulse pressure (pPP) and central-to-peripheral PP amplification (PPamp) in healthy adolescents.
We studied 459 subjects (boys 57%, 16.8 ± 1.5 y) attending the Liceo Donatelli High School in Terni, Italy. cPP was estimated from radial applanation tonometry (SphygmoCor GTF) calibrated to brachial MAP/DBP. Indexed left ventricular mass (iLVM = LVM/BSA) and stroke index (SI = stroke volume/BSA) were derived from 2D-echocardiography (Teicholz's formula, Devereux correction). Carotid-femoral (cf-PWV) and carotid-radial (cr-PWV) pulse wave velocities were measured by SphygmoCor. cPP, pPP and PPamp were introduced as dependent variables in three separate stepwise multivariate regression models. Age, male sex, BSA, heart rate (HR), MAP, stroke index (SI: stroke volume/BSA) and cf-PWV were included in each model as independent factors.