Conclusions: In ex-preterm children and adolescents NGAL and MMP-9 presented significantly associations with systolic BP. The associations for NGAL persisted after adjustment for birth parameters, age and sex suggesting that NGAL should be further investigated as it could serve as early biomarker of hypertension evolution in ex-preterm children and adolescents.

**BASELINE CARDIAC BIOMARKER ANALYSIS FROM THE BASEL POSTPARTUM HYPERTENSION REGISTRY**

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**Objective:** Postpartum hypertension (PPHT) is defined by elevated blood pressure measurements after birth of more than 140 mmHg systolic and more than 90 mmHg diastolic, that persist or develop directly after pregnancy and is associated with adverse cardiovascular and renal outcome. Aim of the current analysis was the evaluation of different prognostic cardiac and stress related biomarkers like cardiac troponin T (cTnT), N-terminal pro-Brain Natriuretic Peptide (NT-proBNP) and growth differentiation factor 15 (GDF-15) in the setting of PPHT.

**Design and method:** Enrollment for the prospective observational Basel Postpartum Hypertension Registry began in June 2020 at the University Hospital Basel. Women with preexisting hypertension, hypertensive disorders of pregnancy (HDP), and de novo postpartum hypertension were enrolled and followed up in a structured management program. Clinical history and lab values were collected out of the electronic health records. Additional blood samples were stored for further evaluation. The current analysis contains biomarker analysis of a subset of 56 out of 288 patients using blood samples taken within one week of giving birth. Serum samples were analyzed for detectable levels of cTnT, NT-proBNP and GDF-15 at the department for Laboratory Medicine at University Hospital Basel using electrochemiluminescence immunoassay Elecsys on the Cobas e 801 platform (Roche Diagnostics, Rotkreuz, Switzerland).

**Results:** Mean age of the patients from whom we measured biomarkers at baseline was 34±4.7. Mean troponin was 8.5 ng/l ± 2.2 with normal cutoffs for this age group being 14ng/l and sex specific cutoffs at 9ng/l. NT-proBNP was 229.86ng/l ± 80.4, with 125ng/l being the normal cut off in an acute disease setting. Mean GDF-15 was 1895.8ng/l ± 323.5 with correlating normal values in healthy populations in the same age range being 564 ± 223 ng/l.

**Conclusions:** This first biomarker analysis shows a trend of elevated NT-proBNP and GDF-15 which are associated with cardiovascular disease or stress. Cardiac troponin T was not elevated in most of the patients, but in a subset of 13 patients. Further analysis and long term outcome correlations remains to be established and may be part of the follow-up analyses of the Basel PPHT cohort.

**BIOFLUID SPECIFICITY OF LONG NON-CODING RNA PROFILE IN HYPERTENSION: RELEVANCE OF EXOSOMAL FRACTION**

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**Objective:** Non-coding RNA (ncRNA)-mediated targeting of various genes regulates the molecular mechanisms of the pathogenesis of hypertension (HTN). However, very few circulating long ncRNAs (IncRNAs) have been reported to be altered in essential HTN. The aim of this study was to identify simultaneously the IncRNA profiles in circulating plasma and packaged them into exosomes associated with UAE in HTN using deep sequencing technology. We also assessed the effect of the biofluid origin on IncRNA signature and regulated pathways.

**Design and method:** In a cohort of hypertensive patients with (n = 22) or without urinary albumin excretion (UAE) (n = 26), we analyzed by next generation sequencing the IncRNA profile associated to UAE. Then, long Non-Coding RNA target predictions and molecular pathways analyses were performed through GO terms and KEGG pathways.

**Results:** Plasma exosomes showed higher diversity and fold change of IncRNAs than plasma, and low transcript overlapping was found between the two biofluids. The majority of unique differentially expressed IncRNA in the exosome fraction were downregulated (71%) in albuminuric patients and 61% in plasma samples. In addition, in plasma samples only 40% of statistically significant transcripts had a log2 fold change higher or equal to 2 or lower or equal to -2, compared with 100% top IncRNAs in exosomal fraction. Enrichment analysis identified different biological pathways regulated in plasma or exosome fraction, which were implicated in fatty acid metabolism, extracellular matrix, and mechanisms of sorting ncRNAs into exosomes, while plasma pathways were implicated in genome reorganization, interference with RNA polymerase, and as scaffolds for assembling transcriptional regulators.

**Conclusions:** Our study found a biofluid specific IncRNA profile associated with albuminuria, with higher diversity in exosomal fraction, which identifies several potential targets that may be utilized to study mechanisms of albuminuria and cardiovascular damage.

**WHAT IS THE SMALLEST CHANGE IN PULSE WAVE VELOCITY MEASUREMENTS THAT CAN BE ATTRIBUTED WITH CERTAINTY TO CLINICAL CHANGES IN ARTERIAL STIFFNESS? A RANDOMIZED CROSS-OVER STUDY**

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**Objective:** Pulse wave velocity (PWV), a direct measure of arterial stiffness, is a promising biomarker of cardiovascular risk and a cardiovascular surrogate outcome. However, there is no general agreement on the expected reproducibility of PWV which hampers identification of the smallest change in PWV that is clinically significant. The objectives of this study were to estimate the reproducibility of PWV measurements over the course of two weeks in a diverse group of participants and under experimental conditions that are clinically relevant (two observers, morning/afternoon sessions, different number of visits); and to investigate factors that could reduce this reproducibility.

**Design and method:** Using the SphygmoCor CVM and Arteriograph devices, we were able to estimate the level of PWV reproducibility as the range of intra-subject values that were observed during the study. Every participant was recorded a total of 12 times with each device, spread out over the course of three visits spaced one week apart, with each visit consisting of two morning and two afternoon recordings. Multilevel mixed-effect models were used to identify factors affecting large discrepancies between consecutive PWV measurements for each device.

**Results:** We show that current guidance on PWV-estimation (at least two PWV measurements, and if their difference exceeds 0.5 m/s, a third measurement) is suboptimal because PWV range for most participants was outside 1 m/s threshold, which has been proposed as minimal clinically-important-difference. The best reproducibility was yielded with median of 4 measurements and 1.1 m/s threshold. Regarding PWV reproducibility and repeatability, which are frequently used interchangeably in studies, while the range showed distinct difference between them, commonly used relative measures of variability, such as coefficient of variability, were comparable. We also found that different physiological variables were predictors of discrepancy between consecutive measurements for two devices, which is likely due to their distinct modes of operation.

**Conclusions:** The evidence base for PWV reproducibility is limited, and more research is needed to deepen our understanding of variation in arterial stiffness.