they were increased in groups with reduced blood pressure (antihypertensives only) and ameliorated to increasingly normal levels in groups with induced hypertension that were also treated (AngII-antihypertensives). Changes in serum sulfatides were strongly related to hepatic expression levels of cerebroside sulfotransferase (CST), which is a key enzyme involved in sulfatide synthesis. Furthermore, the current study suggests that the primary factors affecting CST expression are oxidative stress, peroxisome proliferator-activated receptor γ activity and blood pressure itself.

Conclusions: This study demonstrates that hypertension significantly decreases levels of serum sulfatides by reducing hepatic CST expression via vasoconstrictive effects mediated by AngII. Antihypertensive treatments can ameliorate abnormalities in serum sulfatide levels and may partially prevent hypertension related CVD by positively affecting sulfatide metabolism. The relationship between hypertension and serum sulfatides may provide a potential therapeutic direction for the future treatment of hypertension related to CVD and CKD.

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ALEXIS: THE APPLICATION OF SFLT-1:PLGF RATIO TO EXCLUDE PRE-ECLAMPSIA STUDY

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Introduction: Pre-eclampsia (PE) is a placental disorder defined by new onset hypertension with maternal organ dysfunction (e.g. renal, hepatic or coagulation system dysfunction) or growth restriction in pregnancy. There is a rise in the maternal anti-VEGF factor (soluble fms-like tyrosine kinase-1 (sFlt-1)) and in the pro-angiogenic factor (placental growth factor (PLGF)) in women destined to develop PE. The sFlt-1:PLGF ratio (£38) has a strong negative predictive value of 99.3% (i.e. excluding the development of PE in the week following the test) in a cohort of low-risk women. Its positive predictive value (i.e. predicting PE development) remains poor, about 37%. The performance of this blood test in selected high risk women is not known. The aim of this study was to compare the sFlt-1:PLGF ratio to a “clinical consensus” in the ability to “rule out” the development of PE within one week, in high risk women, in a day assessment unit (DAU).

Methods: This prospective, observational study compares the sFlt-1:PLGF ratio with routine clinical evaluation in excluding PE development within 7 days in high-risk women in a DAU. At recruitment, each woman had a blood sample collected for the sFlt-1:PLGF ratio which was frozen and stored. During DAU, Renal and Obstetric teams agreed on a consensus decision on the likelihood of PE development within one week, in high risk women, in a day assessment unit (DAU). The sFlt-1:PLGF ratio with routine clinical evaluation in excluding PE development within 7 days in high-risk women in a DAU. At recruitment, each woman had a blood sample collected for the sFlt-1:PLGF ratio which was frozen and stored. During DAU, Renal and Obstetric teams agreed on a consensus decision on the likelihood of PE development within one week, in high risk women, in a day assessment unit (DAU). The sFlt-1:PLGF ratio was subsequently measured on all stored samples.

Results: 54 women at high risk for PE were recruited from the DAU. Seven women developed PE within one week, overall 19 developed PE by delivery (PE rate 35%). The sFlt-1:PLGF ratio (£38) had a negative predictive value (NPV) of 95% in excluding development of PE within one week, while the NPV of clinical consensus during DAU was 90% (p=n.s.). The PPV of the sFlt-1:PLGF ratio (>38) was 36%, compared with the “clinical consensus” which was 23% (p=n.s.). The sFlt-1:PLGF ratio correlated with overall PE development and some maternal, but not neonatal, outcomes.

Conclusions: This study shows that both the sFlt-1:PLGF ratio and clinical consensus performed well in “ruling out” PE development within one week, but both were weak in predicting PE development. Due to the high incidence of PE in women referred to DAU, the sFlt-1:PLGF ratio may be a useful tool to reduce unnecessary visits for pregnant women by risk stratification, and to rationalize resources. Our high risk pregnancy group will now re-evaluate the DAU and how this new tool can be safely implemented.

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DIETARY NA+ LOADING WITH NACL OR NAHCO3 PRODUCES SIMILAR CHANGES IN CIRCULATING TH17 AND REGULATORY T-CELLS

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Introduction: Evidence from both human and animal studies indicate that blood pressure responses to sodium (Na+) administration are dependent on the anion present with sodium, and that sodium bicarbonate (NaHCO3) promotes hypertension to a lesser degree than sodium chloride (NaCl). Recent advances implicate the immune system in the development of salt-sensitive hypertension. Specifically, Na+ loading has been reported to activate pro-inflammatory Th17 T-lymphocytes (T-cells) over anti-inflammatory regulatory T-cells (Tregs). It remains unclear however, if initiation of a diet with increased NaCl promotes a greater pro-hypertensive inflammatory response compared to NaHCO3 loading. We hypothesized that initiation of NaCl loading in rats promotes a greater pro-inflammatory T-cell response when compared to NaHCO3.

Methods: Studies were performed in male Sprague Dawley rats (8-12 wks). Rats were Na+ loaded by exchanging the drinking water with either NaCl (0.1M; n = 10) or equimolar NaHCO3 (n = 17) for 3 days prior to analysis. Blood draws were performed via tail vein at baseline prior to Na+ loading, and following 3 days of either NaCl or NaHCO3 treatment. The percentage of Tregs (CD3+ CD4+ FoxP3+) and Th17 T-cells (CD3+ CD4+ RORy+) in peripheral blood was then measured via flow cytometry.

Results: Three days of treatment with NaCl significantly increased peripheral Th17 T-cells [from 1.01 ± 0.43 to 2.72 ± 0.44 [% RORy+ of % CD3+ CD4+ T-cells], p < 0.002]. Treatment for three days with NaHCO3 resulted in similar increases in peripheral Th17 T-cells (from 1.15 ± 0.38 to 3.17 ± 0.47, p < 0.0002). Peripheral Treg populations were significantly increased following treatment with both NaCl (from 4.19 ± 0.53 to 8.27 ± 0.85 [% FoxP3+ of % CD3+ CD4+ T-cells], p < 0.009) and NaHCO3 (from 6.45 ± 0.42 to 10.2 ± 0.57, p < 0.0001). While both NaCl and NaHCO3 resulted in significant increases in peripheral Tregs, NaHCO3 did not produce significantly greater increases in Tregs than NaCl (unpaired t-test, p = 0.73).

Conclusions: Dietary Na+ loading with either NaHCO3 or NaCl produces similar increases in both pro-inflammatory Th17 T-cell and anti-inflammatory regulatory T-cell populations in the plasma. Our results indicating that the inflammatory response to NaCl and NaHCO3 is similar, suggest that immune responses to Na+ loading are independent of the anion present with Na+. As NaHCO3 has been reported to promote hypertension to a lesser degree than NaCl, our data indicate that the immune responses to Na+ loading with different anions are unlikely to contribute to any observed differences in blood pressure, at least during the initiating stages of hypertension. Further studies are required to investigate whether changes in circulating T-cell profiles are representative of organ infiltration or whether differences in the response of circulating T-cells to NaCl and NaHCO3 may be observed over longer periods.

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EARLY LIFE FACTORS AND LONGITUDINAL BLOOD PRESSURE TRAJECTORIES ARE ASSOCIATED WITH ELEVATED BLOOD PRESSURE IN EARLY ADULTHOOD: BIRTH TO TWENTY PLUS COHORT

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Introduction: Multiple perinatal and early life risk factors have been implicated in the development of hypertension. The WHO Study on Global Aging and Adult Health (SAGE 2007-2010) found the prevalence of hypertension amongst South African adults to be 50% of whom 27% were younger than 40 years. The Birth to Twenty Plus (BT20) cohort in urban Soweto, South Africa, previously showed a prevalence of elevated blood pressure (EBP) that ranged from 22.4% at age 5 years to 34.9% at age 18 years. We sought to determine the prevalence of EBP at age 23 years within this cohort and whether this could be linked to any maternal and early life factors and childhood and adolescent blood pressure (BP) trajectories.

Methods: The BT20 cohort is a longitudinal birth cohort following singleton infants (N=3272) born in 1990 to mothers living in Soweto, Johannesburg. For this study, participants who were born in 1990 and 18 years returned in 2012 aged 23 years (n=1540, 49% males) when blood pressure and anthropometric data were collected. Early life and