

# Salt sensitivity of blood pressure at age 7-8 years in preterm born children.

Charlotte A. Ruys, Harrie N. Lafeber, Joost Rotteveel, Martijn J.J. Finken

Department of Paediatrics, VU University Medical Center, Amsterdam, The Netherlands

Conflict of interest: nothing to disclose. Contact: c.ruys@vumc.nl

## Background

Long term effects of preterm birth include increased fat content and cardiovascular disease such as hypertension<sup>1</sup>. Salt sensitivity (SS) could be a mechanism underlying this relationship. In adults SS has been linked to hypertension in relation to low birth weight<sup>2</sup> and obesity.

## Objectives

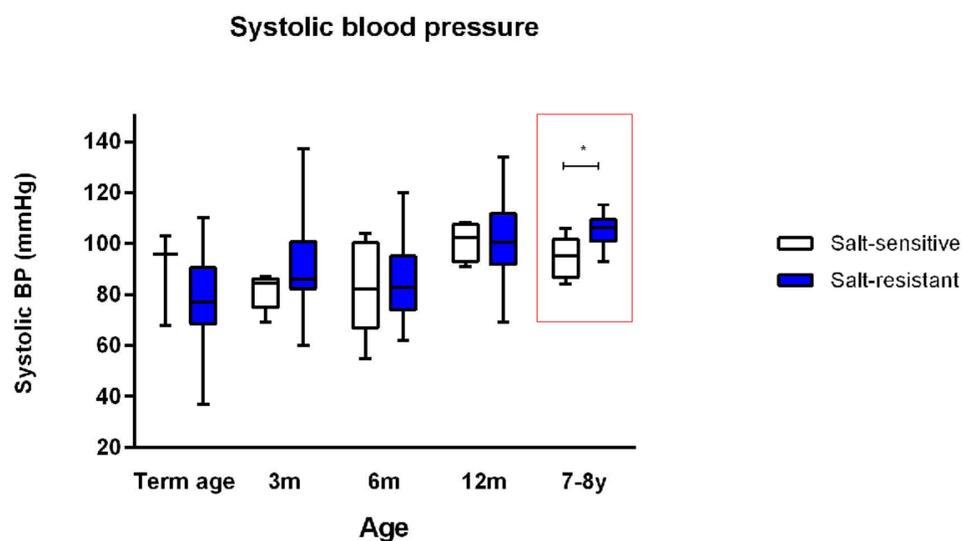
We studied the prevalence of SS as well as its relation with birth weight, infant growth and body composition in 7-8-year old children born with a gestational age of  $\leq 32$  weeks and/or a birth weight  $\leq 1,500$  g.

## Methods

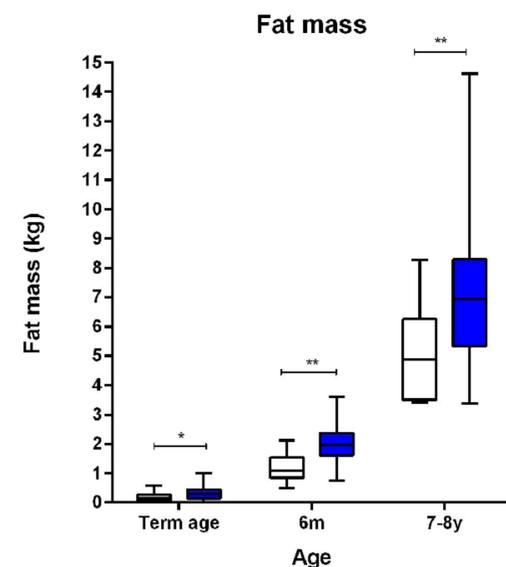
Subjects were recruited from a cohort (n=152) that participated in a nutritional RCT during the first 6 months of life. Birth weight, gestational age and height at term age and at 3, 6, and 12 months corrected age (CA) were available. Of the original cohort, 79 children (40 males) aged 7.9 [IQR 7.6-8.3] years were enrolled. Anthropometry, fasting glucose and insulin and dual-energy X-ray absorptiometry (DEXA) were performed. Blood pressure (BP) was measured at baseline and after 7 days of high-salt diet (0.12 g/kg/day salt supplements added to regular diet). SS was defined as delta mean arterial BP  $\geq 5\%$ . HOMA-IR: [glucose (mmol/l) \* insulin (mIU/l)] / 22.5.

## Results

Sixty-three subjects completed both study days and were included in the analyses. The prevalence of SS was 15.9% (n=10). At term age and during infancy, salt sensitive subjects had similar systolic BP (**Fig. 1**) and lower fat mass (**Fig. 2**). At 7-8 years salt sensitive subjects had lower BMI (13.8 vs. 15.5 kg/m<sup>2</sup>;  $p$  0.008), fat mass (**Fig. 2**) and baseline systolic (95.0 vs. 105.5 mmHg;  $p$ <0.001 **Fig. 1**) and diastolic (51.1 vs. 61.7 mmHg;  $p$ <0.001) BP compared with the salt resistant subjects. Birth characteristics, height and HOMA-IR were similar in both groups.



**Figure 1.** Systolic blood pressure (mmHg) measured at term age, 3, 6 and 12 months CA and 7-8 years.  
\* =  $p$ <0.001



**Figure 2.** Fat mass (kg) measured with DEXA at term age, 6 months CA and 7-8 years.  
\* =  $p$  0.036; \*\* =  $p$ <0.01

## Conclusions

- Children with salt sensitivity had lower fat mass from infancy onwards, lower baseline BP at age 7-8 years and showed no signs of the metabolic syndrome.
- We speculate that the associations between SS and cardiometabolic parameters as found in adults, may only become manifest after fat accretion and increased salt intake later in life.

## References

- De Jong et al., Hypertension. 2012;59:226-234.
- De Boer et al., Hypertension. 2008;51:928-932.

