that hypovolaemia reduced CA-capacity by 32% at ABP below 40 mmHg but not above ($P=0.03$).

Conclusions: In newborn piglets CA-capacity appears to be reduced by hypovolaemia in itself. In this experiment, however, the level of ABP was the dominating determinant of CA-capacity.

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EFFECT OF VOLUME EXPANSION ON CEREBRAL BLOOD FLOW IN HYPOTENSIVE PRETERMS

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Background and aims: To ensure adequate perfusion of the brain, cerebral autoregulation limits cerebral blood flow (CBF) to a certain range. Preterm infants might lack autoregulation, and when hypotensive, be at risk for cerebral damage.

Frequently used treatment for hypotension is volume expansion. We aimed to determine the effect of volume expansion (crystalloid) in hypotensive preterms on fractional cerebral tissue oxygen extraction (FTOE), a measure for CBF.

Methods: Preterm infants with a mean arterial blood pressure (MABP) below their GA, who received volume expansion (15 ml/kg) within the first week of life, were included.

Near-infrared spectroscopy was used to measure regional cerebral oxygen saturation (r_cSO_2). Transcutaneous arterial oxygen saturation ($tcSaO_2$) was measured simultaneously. FTOE was calculated: $(tcSaO_2 - r_cSO_2) / tcSaO_2$. We analyzed 2 episodes of 1h immediately before, and 2 hours after treatment, using Mann-Whitney-U-test.

Results: Twelve measurements in 10 preterms (7 female, median GA 27.9 weeks (range 25.6-31.3), BW 1064 grams (676-1780), 1.7 days old (0.5-6.9), CRIB-score 4 (1-9)) were analyzed. MABP increased in 10 cases (median 29.5 to 32.0 mmHg), though not significantly ($p=.21$). FTOE did not change accordingly (median 0.26 to 0.24, $p=1.0$).

Conclusions: Volume expansion tends to increase MABP but has no effect on FTOE. However, FTOE before volume expansion was always within the normal range. The question arises whether volume

expansion is warranted in preterm infants in case of marginally low blood pressure. Due to the lack of effect on MABP and limited numbers investigated, no conclusion regarding cerebral autoregulation can be drawn.

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DOES MULTIDISCIPLINARY GROUP THERAPY IMPROVE OUTCOME IN OVERWEIGHT/ OBESE CHILDREN AND ADOLESCENTS?

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Objectives: Evaluate the impact of ambulatory group therapy (GT) versus individual therapy (IT) on a large group of overweight/obese children and adolescents.

Methodology: Self-referred overweight and obese children/adolescents, were invited to participate and randomised to GT or IT for 4 months. GT included physical activity, dietary education and psychological sessions (2x3 hrs/week including 3hrs/ 2 weeks with parents). IT was made to measure and consisted of counselling of the child and its family on healthy lifestyle. Dietary advice and psychological support were available, when deemed necessary. Changes in BMI Z-score, WC-Z-score, glucose and fat metabolism, eating habits, lifestyle, wellbeing and self esteem were investigated. The study was approved by the National Medical Ethical Committee (CNER).

Results: 192 children and adolescents participated with informed consent (age range 7-17 years; F: 53.6%). After 4 months, a BMI Z-score reduction was observed with a significantly better outcome in the GT. Positive changes in weight status were observed in 19% of children in the GT compared to 5.9 % of those following IT. Biological parameters show a small change over time but not significantly different between the two groups. Positive changes in eating habits as well as lifestyle were observed more frequently in the GT children, although not all reached statistical significance. Self perceived wellbeing as well as happiness with themselves improved after the GT.

Discussion: Overall, GT resulted in slightly better results in almost all domains, however without reaching statistical significance. Sustainability in time and cost/benefit need further follow up.

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WHICH PERIODS OF GROWTH IN INFANCY AND CHILDHOOD DETERMINE ADIPOSITY AT AGE 16? THE TRAILS STUDY

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Objective: To assess in which period during infancy and childhood, growth is most associated with overall and abdominal adiposity in adolescence, and with associated metabolic traits. Furthermore, we aimed to assess if these associations differ dependent on smoking during pregnancy.

Population & methods: We obtained repeated anthropometric measurements from birth to mean age of 16.2 years on 772 girls and 708 boys in a population-based cohort. At age 16.2 years, weight, height, skinfold thicknesses, %BF, waist circumference, blood pressure, glucose, insulin, and lipids were measured.

Results: Weight gains between age 2 to 4 and age 4 to 7 years were most strongly associated with higher BMI, sum of skinfolds, %BF and waist circumference at age 16.2 years. Increases were +1.01 to +1.42 SDs per SD in weight gain (all $p < 0.001$). Increases in risks of being overweight or obese at age 16.2 years (odds ratios) were 23.9 to 32.5 per SD in weight gain ($p < 0.001$). Gains in these periods were also associated with a less favorable metabolic syndrome score. If mothers smoked during pregnancy, these weight gains were stronger associated with adiposity measurements at age 16.2 years (0.33 - 0.38 SDS higher; all $p < 0.05$) than if mothers did not smoke during pregnancy.

Conclusions: Strong increases in weight SDS from ages 2 to 7 years predispose to overall and abdominal adiposity and their associated metabolic traits in adolescence. In adolescents whose mothers smoked during pregnancy, associations with weight gain during these years is even more pronounced.

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IMPACT OF MATERNAL BODY MASS INDEX ON OFFSPRING LIVER LIPID DEPENDS ON MODE OF DELIVERY

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Background: Maternal overweight/obesity is associated with increased risk of Caesarean Section (CS) and offspring metabolic syndrome, though the mediating biological pathway is unknown. In an animal model pre-labour CS in comparison with vaginal delivery (VD), is associated with significantly higher offspring intrahepatocellular lipid (IHCL), a central component of the metabolic syndrome (Hyde MJ, 2010).

Aim: To examine the effects of maternal Body Mass Index (BMI) and mode of delivery on neonatal IHCL.

Methods: With research ethics approval and informed written parent consent we employed ¹H Magnetic Resonance Spectroscopy of liver during natural sleep in healthy term neonates (Thomas EL, 2008). We used analysis of covariance to explore the effect of maternal BMI, diabetes and mode of delivery, and infant gender, birth weight and postnatal age and their interactions on IHCL (presented as the ratio of lipid CH₂/water).

Results: To date we have studied 57 infants (45 VD, 12 pre-labour CS). IHCL ranged from 0 to 5.5, and maternal BMI from 17 to 35 kg/m². There was a significant interaction between maternal BMI and mode of delivery ($p=0.010$). In neonates born by pre-labour CS, IHCL increased by a mean of 29% [95%CI 9-54%] per unit increase in maternal BMI ($p=0.004$). Maternal BMI had no impact on IHCL in VD infants ($p=0.81$).

Conclusion: VD may activate pathways that protect against liver lipid accumulation in the presence of increasing maternal BMI. Pre-labour CS may pose an added risk for the development of the metabolic syndrome in offspring of overweight/obese mothers.