six months of age with placebo or the probiotic strains *Lactobacillus rhamnosus* GG, *Lactobacillus rhamnosus* LC705, *Bifidobacterium breve* Bbi99 and *Propionibacterium freudenreichii* ssp. *Shermani* JS. 177 of the families completed questionnaires addressing allergy development until two years of age.

Results: The cumulative incidence of eczema was not significantly different in the probiotic (21.7%) and the placebo group (14.1%). Children receiving probiotics, as compared with placebo, had a lower cumulative incidence of wheeze, 34.1% versus 49.4% ($p=0.04$). Children attending day-care had a lower cumulative incidence of eczema ($p=0.03$). Recurrent wheeze was associated with treatment with antibiotics ($p=0.005$) and care in the neonatal ward ($p=0.02$).

Conclusion: Postnatal probiotic supplementation did not affect the development of infant eczema in children with genetic risk for diabetes, but showed association with a lower incidence of wheeze. Allergy development was associated with environmental factors potentially modulating microbial load.

92

IMPAIRED CEREBRAL AUTOREGULATION IS ASSOCIATED WITH INCREASED BLOOD PRESSURE VARIABILITY IN PRETERM INFANTS

R. Silas^{1,2}, S. Hew¹, A.M. Walker¹, F. Wong^{1,2,3}

¹The Ritchie Centre, Monash University, ²Monash Newborn, Monash Medical Centre, ³Department of Paediatrics, Monash University, Melbourne, VIC, Australia

Background: Impaired cerebral autoregulation is a key pathogenic factor in preterm cerebral injury, but the association of blood pressure variability (BPV) with autoregulatory impairment is unknown. We hypothesized that increased BPV in sick preterm infants leads to cerebral autoregulatory impairment. Using spectral analysis, we aimed to determine autoregulatory capacity in the early postnatal period, assessed by the correlation between mean arterial blood pressure (MABP, mmHg) and cerebral oxygenation (tissue oxygenation index, TOI %), and its relation with BPV(mmHg²)

Method: Twenty-seven preterm infants of mean gestational age of 26.3 (± 1.3) weeks were studied on the first 3 postnatal days. TOI was continuously measured by Spatially Resolved Spectroscopy

(Hamamatsu NIRO 200) together with MABP from an arterial catheter. Spectral coherence analysis was used to assess concordance between MABP and TOI, expressed as Coherence score (Coh) with a value of >0.5 suggesting impaired autoregulation. BPV was assessed using power spectral density of MABP.

Results: In the frequency range 0.003-0.02Hz, BPV and maximum Coh showed a significant correlation ($p=0.03$). The median (IQR) minimum BPV associated with Coh >0.5 was lower in the very sick infants with Clinical Risk Index for Babies (CRIB) score of >7 , compared with infants with CRIB score < 7 [29.7 (24.7-76.9) vs 99.7 (79.6 - 208.4) mmHg², $p=0.03$]

Conclusions: Cerebral autoregulatory impairment is associated with increased BPV, though this occurs with a comparatively lower level of BPV in extremely sick preterm infants. Our findings suggest that the sickest preterm infants are more vulnerable to cerebral injury from BPV.

93

CYTOKINES ASSOCIATE WITH TISSUE FACTOR BUT NOT WITH THROMBIN FORMATION IN PRETERM INFANTS

A. Palojarvi, J. Petäjä, C. Janér, S. Andersson

Children's Hospital, Helsinki University Hospital, Helsinki, Finland

Background: Tissue factor (TF), the in vivo initiator of coagulation cascade, is a central link between inflammatory and coagulation pathways.

Objective: To evaluate associations between cytokine concentrations, TF and thrombin formation in preterm infants.

Methods: We measured proinflammatory cytokines (IL-6, IL-8, TNF-alpha), anti-inflammatory cytokine IL-10, free TF and, as indicator of thrombin generation, prothrombin fragment 1+2 (F1+2) in 56 VLBW infants (GA 23+5-31+5 wks, BW 600-1500g). Cord blood and blood samples on day 1, 3, and 5-7 were collected. From plasma cytokines were analyzed with Luminex technique, free TF and F1+2 were analyzed with Elisa tests (American Diagnostica, Dade Behring).

Results: IL-6 correlated with free TF in cord samples and on days 1 and 3 ($R=0.53$, $p=0.013$, $n=21$; $R=0.380$, $p=0.019$, $n=38$; $R=0.373$, $p=0.042$, $n=30$). IL-8 correlated with free TF on days 1 and