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UNCONJUGATED BILIRUBIN AFFECTS FECAL PROTEIN LOSS AND CLINICAL PRESENTATION OF FOOD ALLERGY IN HEALTHY TERM NEONATES. A PILOT, CLINICAL STUDY.

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Background / Aims: Penetration of intact food allergens through the intestinal epithelial barrier is thought to trigger food allergy in genetically predisposed individuals. Previous *in vivo* studies¹ show that unconjugated bilirubin increases intestinal permeability. The present research tests: a) the hypothesis that neonatal hyperbilirubinemia may facilitate the passage of intact protein through the intestinal barrier *in vivo* b) the possibility that jaundiced neonates may have an increased prevalence and /or a different clinical presentation of food allergy in the first year of life. **Patients and Methods:** a) Protein leakage through the intestinal barrier into the lumen was measured by quantitation of stool alpha1 anti-trypsin (a1AT) by radial immunodiffusion. b1) Prevalence of cow's milk protein allergy (CMPA) in the first year of life was investigated in a cohort of 353 neonates with moderate hyperbilirubinemia (peak serum bilirubin between 12 and 20 mg/dl) and 339 controls (peak bilirubin <8) matched for sex, birthweight, family income, maternal age, maternal smoking during pregnancy, parental history of atopic diseases and breastfeeding duration. b2) A cohort of 47 children with documented food allergy was studied in respect of history of neonatal hyperbilirubinemia and clinical features of food allergy. **Results:** a) A significant correlation was found between hyperbilirubinemia and a1AT (r=0.5; p= 0.021) in healthy term neonates. b1) Seventeen out of 353 infants in the hyperbilirubinemia group developed CMPI in the first year of life versus only 4/339 controls ($\chi^2= 6.653$; p<0.01). b2) Fifteen out of 47 food allergy-affected infants had an history of neonatal hyperbilirubinemia (32%). Compared to those with negative history (68%), these infants had a significantly earlier onset of food allergy (age in months: 3±3 vs 7.2±6.5; p<0.05) and a significant prevalence of growth stunting and gastrointestinal manifestations. **Conclusions:** these preliminary observations suggest that neonatal hyperbilirubinemia is a possible risk factor for food allergy in the first year of life. This may be due to an increased transit of intact proteins through the intestinal epithelial barrier.

References

- 1) Jaehrig K, Ballke EH, Koenig A, Meisel P. Transepithelial electric potential difference in newborns undergoing phototherapy. *Pediatr Res* 1987; 21 :283-4.