Aspiration of gastric (acid) content is a major cause of acute respiratory failure that occurs in children with severe gastroesophageal reflux, gastrointestinal malformations, and neurologic impairment. Alveolar surfactant alterations were demonstrated in diseases with similar aetiology like ARDS and meconium aspiration syndrome. To understand if the surfactant system is modulated locally or if an unilateral injury influences both lungs, we measured alveolar surfactant DSPC in a murine model of unilateral acid injury.

We developed a mouse model of acid lung injury confined in a single lung (right). Deuterated water was injected 18 h after the lung injury and DSPC-palmitate deuteration enrichment was measured for the next 24 hours in BAL and tissue. MPO and total protein analysis was performed separately to each lung to assess the inflammatory status.

Inflammatory status of both lungs was markedly increased in the injured (right) lung. DSPC content was not significantly different between the two lungs in tissue homogenates at all time points (1.8±0.3 vs. 1.7±0.6 umol/g of lung). Conversely, DSPC content in BAL was significantly increased in the not-injured lung (1.00±0.36 vs. 1.49±0.5 umol/g of lung, p=0.008). Fractional synthetic rates did not significantly change in both homogenates and BAL between the two lungs.

These preliminary data suggest that surfactant system is likely to be regulated at the whole lung level. The not-injured lung seems to increase the amount of DSPC in the alveolar space as a compensatory mechanism for the damage in the contralateral lung.

**405** CLINICAL EFFECTIVENESS OF EARLY ADMINISTRATION OF CAFFEINE AND LOW-DOSE HYDROCORTISONE TO PRETERM NEWBORNS WITH A HIGH RISK OF BPD DEVELOPMENT

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Because intratrueine and/or early postnatal inflammation play(s) an important role in the pathogenesis of bronchopulmonary dysplasia (BPD) early administration of anti-inflammatory therapy to high-risk preterm newborns is theoretically substantiated. In a randomised study we evaluated the clinical effectiveness of early administration of caffeine and hydrocortisone to very preterm newborns that required mechanical ventilation (MV) shortly after birth.

**Methods** 120 very low birth weight newborns (gestational age < 32 wks.) on MV were randomly assigned on the first day of life to one of the 2 groups depending on administration of caffeine and hydrocortisone. 60 infants with gestational age of 28-32 wks. were treated with caffeine (20/5 mg/kg/day) and hydrocortisone (1 mg/kg/day) for 12 days. 60 babies with gestational age of 28-32 wks. in the control group were managed according to standard guidelines. The primary study outcome was the incidence of mortality and BPD at 36 weeks’ corrected age. BPD was defined according to the NIH consensus definition in modification of Walsh et al. (2003).

**Results** BPD developed in 19 (33%) infants treated with caffeine and hydrocortisone and in 20 (37%) babies from the control group (p=0.05). The composite outcomes (death plus BPD) (26 [43%] vs. 27 [45%]) accordingly; p=0.05) and incidences of severe BPD were not different between the groups either. Early anti-inflammatory therapy reliably facilitated extubation but did not reduce the duration of the initial period of MV.

**Conclusions** Early administration of caffeine and hydrocortisone did not prevent BPD development in very preterm newborns requiring MV.