401 VENTILATION PARAMETERS DURING RESUSCITATION: COMPARISON OF TWO DIFFERENT DEVICES IN A MANNEQUIN MODEL WITH AND WITHOUT DISTRACTION

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Background and Aims Positive pressure ventilation is a common intervention in neonatal resuscitation. Distraction, type of device and experience may influence performance. Studies have not included self-inflating bags (SIB) equipped with a PIP manometer and expiratory PEEP valve. We aimed to compare clinicians' ability to ventilate a mannequin using a SIB with additional manometers against a T-piece (TP), with and without distraction.
Method 50 medical and nursing staff were tested using standarised case scenarios with a leak free intubated mannequin. Participants targeted PIP 30 cmH_2O, PEEP 5 cmH_2O, inflation rate (IR) 60 inflations/minute with both devices in randomised order. We analysed PIP, PEEP, IR, expired tidal volume (TVe), professional group and compared devices during baseline and 3 minutes of distraction.
Results 12,981 inflations were analysed. Mean (SD) ventilation parameters are shown in table.

Abstract 401 Table 1

Parameter	Baseline		Distraction	
	TP	SIB	TP	SIB
PIP	29.3 (0.6)	29.0 (2.3)	29.3 (0.7)	28.9 (3.5)
PEEP	4.2 (0.6)	5.5 (0.9)	4.2 (0.6)	5.5 (0.9)
IR	53.6 (10.3)	56.6 (11.7)	53 (13)	56.2 (13.5)
TVe	10.2 (1.8)	9.7 (0.9)	10.3 (1.9)	9.6 (1.5)

When analysed by operator, more variation was observed in IR (P=0.029) and TVe (P=0.002) with SIB during distraction.
Conclusions Clinicians' general performance when using a SIB where PIP and PEEP are displayed is comparable to a T-Piece, however more variation in IR and TVe occurs under distraction. This may be relevant in a real resuscitation.

402 EFFECT OF ANTENATAL CORTICOSTEROIDS IN ACTIVITY AND EXPRESSION OF SECRETORY PHOSPHOLIPASE A2 AND TNF ALFA IN LUNG OF NEWBORN RATS

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Introduction The sPLA2 plays an important role in the development of acute respiratory distress syndrome. It is regulated by many factors including steroids and TNFa. Antenatal corticosteroids are recommended for preventing respiratory distress syndrome in preterm infants. Recent studies suggest that betamethasone might be a better choice than dexamethasone. The aim of this study is evaluate differences between both antenatal corticosteroids in the regulation of sPLA2 and TNFa.
Methods Dexamethasone, betamethasone or saline were administered intravenously to pregnant Wistar rats on the 20th and 21st days of gestation. We evaluated pulmonary sPLA2 and TNFa mRNA in newborn rats at birth by RT-PCR. We also evaluated sPLA2 activity by an ultrasensitive non-radioactive method on microplate and the TNFa protein expression by ELISA. Differences between the groups were determined by one way ANOVA ($p<0.05$).
Results We observed a statistically significant decrease in the sPLA2 mRNA in the betamethasone (0.61) and dexamethasone (0.26) groups respect the control (1.05) group and a decrease in the sPLA2 activity in the betamethasone group (33.78) respect the control group (50.74). We observed a statistically significant decrease in the TNFa protein in the betamethasone group (472.61) respect the dexamethasone group (768.65).
Conclusions Antenatal glucocorticoids inhibits the expression of sPLA2 through the reduction of TNFa in the lung of newborn rats. These potential beneficial effects are more evident in the group treated with antenatal betamethasone. Our studies also support the notion that betamethasone could be the drug of choice for treating pregnant women at risk of preterm delivery.

403 SURFACTANT DISATURATED-PHOSPHATIDYLCHOLINE KINETICS IN PNEUMONIA BY STABLE ISOTOPES

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Background and Aim Whether pulmonary surfactant deficiency or dysfunction contributes to the pathogenesis of neonatal pneumonia is still debated. Aim of our study was to measure surfactant disaturated-phosphatidylcholine (DSPC) kinetics and surfactant specific proteins A and B (SP-A, SP-B) amount in term newborns with pneumonia using stable isotopes as tracers.
Methods Twenty-seven term newborns (GA 39.0±1.5 weeks, BW 3165±602 g) requiring mechanical ventilation were studied. Twelve had severe pneumonia and 15 no lung disease. All newborns received intra-tracheally 2 mg/kg $U^{13}C$-DPPC mixed with 2 mg/kg of exogenous surfactant. Isotopic enrichment of DSPC palmitate was measured from tracheal aspirates by mass spectrometry and kinetic data calculated. Surfactant proteins were measured by ELISA. Data were expressed as median (interquartile range) and comparisons were performed by Mann-Whitney test. $p<0.05$ was regarded as statistically significant.
Results DSPC pool size (PS) was 9.3 mg/kg (3.1–30.2) in newborns with pneumonia and 38.0 mg/kg (24.9–124.6) in controls, p=0.016. DSPC half-life (HL) was 12.7 h (5.2–20.2) and 25.6 h (18.5–65.6) in newborns with pneumonia and in controls, respectively (p=0.004). Analysis for SP-A and SP-B are in progress. In newborns with pneumonia a correlation was found between DSPC kinetic parameters and oxygen requirement (DSPC PS and mean FiO2, R= –0.61, p=0.047; DSPC HL and mean FiO2, R= –0.54, p=0.086).
Conclusions Surfactant DSPC kinetics was found to be markedly impaired in term newborns with pneumonia. Preliminary data suggest that these alterations correlate with disease severity; thus, studies on exogenous surfactant therapy and on the effect on surfactant metabolism are needed.

404 DSPC-PALMITATE KINETIC IN A MODEL OF LUNG UNILATERAL ACID INJURY

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