

Background and aims If infants fail to initiate spontaneous breathing after birth, international guidelines recommend positive pressure ventilation (PPV). However, mask PPV remains challenging with leakage occurring commonly. Despite a variety of available facemasks, none has been systemically studied in newborn infants. We aimed to determine if using a Fisher and Paykel (FP) round facemask would reduce mask leak compared to using a Laerdal round facemask during mask PPV in preterm infants.

Methods From April to September 2013, at the Royal Alexandra Hospital, newborn infants.

Results Fifty-eight preterm infants (n = 29 in each group) were enrolled; mean±SD gestation 28 ± 3 weeks; birth weight 1210 ± 448 g, 30(52%) male, 39(67%) born by caesarean section. Apgar scores at 1 and 5 min were 5 ± 3 and 7 ± 2, respectively. Infants randomised to the FP facemask and Laerdal facemask had similar mask leak (37 ± 17% vs. 33 ± 12%, respectively, p = 0.30) and tidal volume (7.3 ± 3.0 mL/kg vs. 6.9 ± 2.7 mL/kg, p = 0.73) during PPV. There were no significant differences in ventilation rate, inflation time or airway pressures between groups.

Conclusions The use of either facemask during PPV in the delivery room yields similar mask leak.

0-069a VIDEOLARYNGOSCOPY AS AN INTUBATION TRAINING TOOL FOR NEONATAL TRAINEES – A RANDOMISED CONTROLLED TRIAL

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10.1136/archdischild-2014-307384.138

Background and aims Endotracheal intubation is a mandatory skill for neonatal trainees. However, inexperienced trainees have success rates <50%. We compared intubations supervised by an instructor watching a videolaryngoscope screen with the traditional method where the instructor does not have this view.

Methods RCT (ANZCTR# 12613000159752) at The Royal Women’s Hospital, Melbourne. Eligible intubations were those performed orally, in infants without facial or airway anomalies, in the delivery room or in NICU, by trainees with <6 months experience. Intubations were randomised to videolaryngoscope screen visible to the instructor (intervention) or covered (control). Primary outcome was first attempt intubation success rate confirmed by colorimetric detection of expired CO₂. A sample size of 206 provided 80% power to detect a 20% difference in success rates (50% vs. 70%).

Abstract 0-069a Table 1

	Control (n = 102)	Intervention (n = 104)	P
Corrected gestation (w)*	29 (27–32)	29 (27–32)	0.82
Weight (g)*	1125 (816–1569)	1172.5 (819–1884)	0.35
Success rate – n (%)	42/102 (41.2%)	69/104 (66.3%)	<0.001
Success rate with premedication – n (%)	35/79 (44.3%)	56/78 (71.8%)	<0.001
Success rate without premedication – n (%)	7/23 (30.4%)	13/26 (50%)	0.164
Lowest SpO ₂ (%)*	69 (46–82)	70 (47.5–83)	0.88
Lowest heart rate (bpm)*	151 (139–162)	150 (134.5–163.5)	0.99
Duration of attempt (s)*	53 (41–70)	51 (39–63)	0.15

* median (interquartile range)

Results

Conclusions Intubation success rates of inexperienced doctors were significantly improved, OR 2.81 (95% CI 1.54–5.17), when the instructor was able to share their view on a videolaryngoscope screen.

Nephrology I

0-070 HAEMODYNAMIC IMPACT OF THE CONNECTION OF CONTINUOUS RENAL REPLACEMENT THERAPY IN CRITICALLY ILL CHILDREN

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10.1136/archdischild-2014-307384.139

Background Continuous Renal Replacement Therapies (CRRT) are the treatment of choice for critically ill children with Acute Renal Injury. Hypotension after starting CRRT is frequent but there are no studies that have analysed their incidence and importance.

Patients and methods A prospective, observational study was performed including critically ill children treated with CRRT between October 2009 and December 2013. Hemodynamic data and connection characteristics were collected before, during and 60 min after CRRT circuit connection. Hypotension with the connection was defined as a decrease in mean arterial pressure >20% from baseline and/or intravenous fluid expansion and/or if increase in vasopressors was required.

Results 161 connections in 36 children (median age 18.8 months) were analysed. 28 patients (77.8%) were in the postoperative period of cardiac surgery, 94% on mechanical ventilation and 86.1% with vasopressors. The circuit prime was discarded in 8.7% of connections, the heparinised prime was infused in 18% and the circuit was previously primed with colloids (albumin in 77.5%) or crystalloids without heparin in 73.3%. Hypotension occurred in 49.7% of connections with a median of 5 min after the beginning. In 38.5% of the connections fluid expansion was required and in 12.4% vasopressors were increased. There was no hypotension relation to age or weight. Previous priming of the circuit reduced the frequency of hypotension to 44.6% vs. 71.4% (p = 0.004).

Conclusions Hypotension after CRRT connection is very frequent in critically ill children. Priming the circuit improves hemodynamic tolerance of the connection.

0-071 SALT-SPARING DIURETIC ACTION OF A UREA ANALOGUE INHIBITOR OF UREA TRANSPORTERS UT-A AND UT-B IN RATS

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10.1136/archdischild-2014-307384.140

Background and aims Urea is end metabolite of protein metabolism and is crucial for generation of hypertonic renal medulla. Urea transport to medullary interstitium is facilitated by urea transporters (UT-A and UT-B). UT inhibitors have potential use as a novel class of salt-sparing diuretics.

Methods UT inhibitor effect of urea analogue dimethylthiourea (DMTU) was investigated and characterised in cell-based assays.

Kidney function tests were investigated in both 1-day and 7-days DMTU-treated (500 mg/kg ip initially, then 125 mg/kg ip every 12h) rats. The effect of DMTU on maximum urine concentrating function was investigated in low (6%) and normal (20%) protein-fed rats.

Results DMTU non-competitively inhibited UT-A and UT-B with IC_{50} of ~ 3 mM. Following 500 mg/kg ip injection, plasma DMTU concentration was initially 10 mM (plasma elimination $t_{1/2} \sim 10$ h) and urine DMTU concentration was >20 mM for 12 h. DMTU-treated rats showed reversible, sustained reduction in urine osmolality ($>60\%$) and 3-fold increased daily urine output. DMTU increased renal electrolyte-free water excretion without altering solute excretion. DMTU impaired maximum urinary concentrating function only in normal protein-fed rats. Methylurea, a non-UT inhibitor urea analogue, had no effect on either urine volume or osmolality. DMTU-treated rats had greater diuresis and much reduced urinary salt loss compared to that of furosemide-treated rats.

Conclusions These results establish a rat model of sustained UT inhibition and demonstrate remarkable diuretic efficacy of UT inhibition. Prominent effect of UT inhibitors on net renal water excretion implies a novel therapeutic strategy for treatment of oedema in hypervolemic diseases.

Neuromuscular Disorders

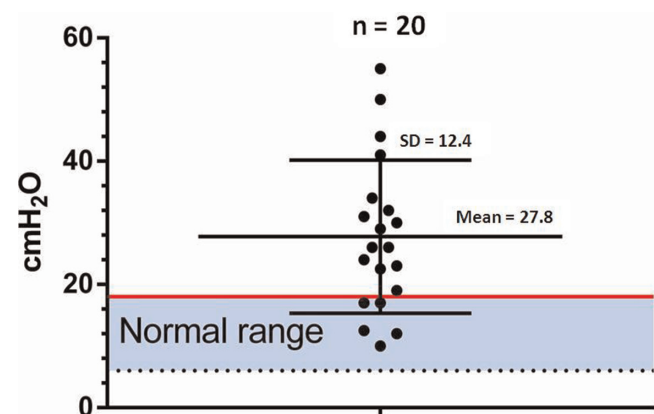
0-072 INCREASED INTRACRANIAL PRESSURE IN CHILDREN WITH ACUTE DISSEMINATED ENCEPHALOMYELITIS

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10.1136/archdischild-2014-307384.141

Introduction Lumbar puncture (LP) is routinely performed as part of the workup evaluation of suspected acute disseminated encephalomyelitis (ADEM). Mild pleocytosis and/or increased CSF protein concentration are common findings in ADEM. However, the CSF opening pressure, reflecting the intracranial pressure (ICP), has not been acknowledged to date in the literature.

Methods Chart reviews of paediatric patients hospitalised in the Tel-Aviv Sourasky medical centre, between 2005–2013, that were diagnosed with ADEM, were identified retrospectively.



Abstract O-072 Figure 1 CSF opening pressure of 20 patients with ADEM. Each dot represents a patient, the blue zone indicates the normal limits of CSF opening pressure, the upper normal limit of 18cmH2O marked as a red line. The scatter plot shows that most patients had elevated opening pressures with 4 patients having values beyond 40cmH2O.

Results Among 35 children diagnosed with ADEM, 20 who had documented CSF opening pressure comprised the study group. The mean age was 5.3 ± 4.1 years, ten males (50%); Mean CSF opening pressure was 27.8 ± 12.4 cmH₂O, range 10–55 cmH₂O. Considering the upper normal limit of CSF opening pressure in this age group (18 cmH₂O), 15/20 (75%) patients had elevated pressure and one sample t-test comparison showed significant elevated CSF opening pressure among patients with ADEM ($p_v = 0.0023$, 95% CI 3.9–15.6). Minimal pleocytosis was present in seven samples (median=2 cells/mm²). Eighteen out of twenty (90%) patients had clinical complaints/signs that can be explained by increased ICP (drowsiness/encephalopathy n = 18, vomiting n = 8, headache n = 8).

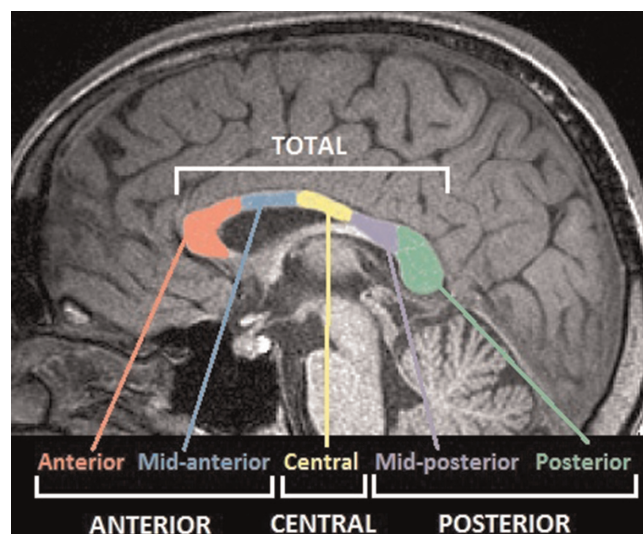
Discussion This study highlights that increased ICP is a prominent patho-physiologic change occurring in the CNS of ADEM patients. In our cohort, this was the most common CSF abnormal finding, independent of pleocytosis level. This observation is in line with the common non-focal neurological symptoms and signs and the beneficial effect of steroid treatment in ADEM. Furthermore, it suggests a potential efficacy of other reducing ICP treatments in ADEM.

0-073 TOTAL AND REGIONAL CORPUS CALLOSUM VOLUMES ARE RELATED TO INTELLIGENCE AND MOTOR FUNCTION IN DYSKINETIC CEREBRAL PALSY

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10.1136/archdischild-2014-307384.142

Background The relationship between corpus callosum (CC) morphology and mainly motor outcomes has been studied in spastic cerebral palsy (CP) but not yet in dyskinetic CP, which



Abstract O-073 Figure 1 CC subdivisions generated by Freesurfer (in colour)