

LVO. Using TDI may improve the identification of cardiac dysfunction and guide further management.

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O-218 THE EFFECT OF CAFFEINE ON DIAPHRAGMATIC ACTIVITY IN PRETERM INFANTS

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Background Preterm infants born with a GA <32 weeks are at high risk of developing central apnea of prematurity (AOP). Treatment with caffeine reduces central AOP by stimulating the breathing centre. Animal studies suggest that caffeine improves contractility of the diaphragm. We have determined the effect of caffeine on diaphragmatic activity in preterm infants.

Methods Spontaneously breathing preterm infants <32 weeks treated with an intravenous loading dose (10 mg/kg) of caffeine base for central AOP were eligible for the study. Diaphragmatic activity was continuously measured by transcutaneous electromyography (dEMG) starting 30-min before (baseline) until 1-hour after caffeine administration. Diaphragmatic inspiratory activity per breath, expressed as the relative amplitude change of dEMG (logEMGAR), area under the curve (AUC), respiratory rate (RR), as well as tidal volume (V_t) measured by respiratory inductive

plethysmography, were calculated at 4 fixed time points after caffeine administration (5,15,30 and 60-min) using the average of all breaths in a 30-sec recording and compared to baseline.

Results 30 preterm infants (mean GA 29.1 ± 1.3 wk; birth weight 1237 ± 370 g) were included. 5-min after caffeine administration, diaphragmatic activity significantly increased (median, IQR) compared to baseline; logEMGAR (0.13, 0.09–0.17), corresponding with an amplitude increase of 35% (22–49%). AUC (19%, 11–34%) and V_t (30%, 7–48) also increased significantly. Caffeine did not impact RR. The increased activity was observed at all subsequent time points.

Conclusions This is the first study showing that caffeine treatment, besides stimulating respiratory drive, results in a rapid (within 5-min) and sustained increase in diaphragmatic contractility in preterm infants.

Late Breaking

O-219 DEVELOPING AND EVALUATING AN ON LINE PARENT INFORMATION AND SUPPORT APPLICATION TO FACILITATE HOME-BASED CARE BY PARENTS OF LONG-TERM CONDITIONS: A FEASIBILITY RCT

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Abstract O-219 Figure 1

Background/aims We developed a novel, long-term condition-specific Interactive Health Communication Application, the on-line parent information and support (OPIS) to promote parents' home-based management ability. We aimed to assess feasibility of a future full-scale randomised clinical trial (RCT) of OPIS in terms of recruitment, retention and data collection procedures; and investigate trends in change on outcomes in a small-scale preliminary RCT in parents.

Methods Parents were randomly assigned to: usual support (control) or usual support plus OPIS access for 20 weeks (intervention). Both groups completed study measures at study entry (T1) and exit (T2). We assessed feasibility between groups.

Results 55 parents of 39 children enrolled in the RCT; 19/26 (73%) of intervention parents and 22/29 (76%) of control parents completed T2 data collection. The overall retention rate was 41/55 (75%). Data collection was judged to be feasible. All intervention parents showed evidence of having accessed OPIS, indicating complete uptake. The intent-to-treat analysis showed greater improvement in self-efficacy to manage their child's condition for intervention parents when compared to control group parents (3.21 v 1.09, 95% CI -1.27 to 5.51, Cohen's d =.41).

Conclusion A full-scale RCT of OPIS is feasible. OPIS has the potential to beneficially affect self-reported outcomes including parents' competence to provide home-based clinical care-giving. ll-scale RCT that is sufficiently powered to detect the effects of OPIS on outcomes is indicated. Our design and methodology could potentially be transferred to the management of other conditions.

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EXCESSIVE GROWTH FROM 6 TO 24 MONTHS OF AGE: RESULTS FROM THE PREVENTION OF OVERWEIGHT IN INFANCY (POI) RANDOMISED CONTROLLED TRIAL

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The Prevention of Overweight in Infancy study investigated whether education and support around sleep, physical activity, and diet could reduce excessive weight gain in the first two years of life. The analysis presented here assessed weight at 24 months postpartum and growth from 6 to 24 months. 802 mother-infant pairs were randomised to: 1) FAB – food, activity and breastfeeding (8+ contacts), 2) Sleep – prevention and treatment of sleep problems (2+ contacts), 3) Combo – both interventions (10+ contacts), or 4) Control. All groups received standard government funded “Well Child” care (7 contacts). Anthropometric measurements were obtained at 6, 12, 18 and 24 months postpartum by trained measurers blinded to group allocation. Rapid and extremely rapid growth were defined as a change in BMI z-score > 2/3 SD (World Health Organisation definition) and > 4/3 SD respectively. 84.5% (n = 678/802) of participants were followed up at 24 months with 40.1% having BMIs ≥ 85th percentile (n = 272). Among those with both 6 and 24 month data, 53.9% (351/651) showed rapid growth with 148 of these showing extremely rapid growth (22.7% of the sample). There was no difference between intervention groups for rapid growth

(p = 0.892) or extremely rapid growth (p = 0.630) compared to normal growth. Similarly, there was no intervention effect on those classified as overweight at 24 months who also displayed rapid or extremely rapid growth (p = 0.936 for rapid growth, p = 0.485 for excessive rapid growth) from 6–24 months. Our results indicate it is difficult to modify excessive growth.

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SAFEBOOSC – A PHASE II RANDOMISED CLINICAL TRIAL ON CEREBRAL NEAR-INFRARED SPECTROSCOPY OXIMETRY IN EXTREMELY PRETERM INFANTS

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Background and aims Extremely preterm infants have a high risk of moderate to severe long-term neurodevelopmental impairment. Hypoxic or hyperoxic brain injury may be a contributing factor. The SafeBoosC trial investigated if it is possible to stabilise the cerebral oxygenation of extremely preterm infants.

Methods This was a phase II randomised, single blinded, clinical trial. Infants born before 28 weeks of gestation were eligible. Within 3 h of birth, infants were randomly assigned to either cerebral near infrared spectroscopy (NIRS) oxygenation monitoring in combination with a treatment guideline (experimental) or blinded NIRS monitoring with standard care (control). The primary outcome was the area under the curve of the time series of absolute deviation from the cerebral oxygenation target range of 55% to 85%, expressed in % hours (the burden of hypoxia and hyperoxia). We hypothesised that there would be more than 50% reduction in this burden in the experimental group.

Results 166 infants with a median postmenstrual age of 26.4 weeks were enrolled (Table 1). Two infants were withdrawn. 86 infants randomised to the NIRS group had a median burden of hypoxia and hyperoxia of 36.1% hours (IQR 9.2 to 79.5)

Abstract O-221 Table 1

Characteristics	Experimental (n = 86)	Control (n = 80)
Birth weight, median (range), g.	806 (410 to 1286)	880 (490 to 1330)
Gestational age at birth, median (IQR), wk.	26.6 (25.7 to 27.4)	26.8 (25.5 to 27.6)
Male sex, n (%)	44 (51.2)	34 (42.5)
Multiple births, n (%)	20 (23.3)	14 (17.5)
Prenatal steroids, n (%)	58 (67.4)	56 (70.9)
Prolonged rupture of membranes, n (%)	26 (30.6)	32 (40.5)
Maternal clinical chorioamnionitis, n (%)	6 (7.1)	7 (9.0)
Apgar score ≤ 5 at 5 min, n (%)	15 (17.6)	14 (17.7)
Umbilical arterial pH, mean (SD)	7.33 (0.088)	7.31 (0.096)