Fantoms

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CAFFEINE FOR LATE PRETERM INFANTS?

Elizabeth Oliphant and colleagues report the outcomes of a double-blind placebo controlled randomised dosage trial of caffeine for late preterm infants. Their focus was on finding a suitable dose to prevent intermittent hypoxaemic (IH) events between 34 weeks gestation and term equivalent age in infants born between 34^{+0} and 36^{+6} weeks gestation. Intermittent hypoxic events were defined as falls in SpO_2 of 10% or more lasting less than 2 min. Four dosing regimens were evaluated. Compared with placebo, IH was significantly reduced in the combined groups of infants treated with caffeine. There were variations in observed effects between individual dosage groups, so that effects were statistically significant in some but not others. The authors argue that the 20 mg/kg/day dose would be the best for further evaluation. There was a small reduction in time with SpO_2 <90% and a small increase in baseline SpO_2. Important adverse effects were not identified but the total number of infants studied was 132, so there was limited power to identify infrequent events. The authors are interested in determining whether reducing intermittent hypoxaemia during these weeks might be associated with later neurodevelopmental advantages and hope to conduct a large RCT to test this hypothesis. In the Caffeine Therapy for Apnoea of Prematurity Trial, the benefits shown in more immature infants were observed with treatment that ceased at around 34–36 weeks corrected gestational age, so if there were benefits to this treatment demonstrable in late preterm infants the question would arise whether caffeine should be continued until term in less mature infants too. I hope that the study design will consider this. ***See page F106***

LARYNGEAL MASK AIRWAY VERSUS FACE MASK VENTILATION OR INTUBATION FOR NEONATAL RESUSCITATION

Face mask ventilation is technically difficult, particularly for individuals who seldom need to provide it. Laryngeal mask airways (LMA) are increasingly recognised to be a useful alternative and training in their use is now incorporated into the UK Resuscitation Council Newborn Life Support (NLS) course. Shivashankar Diggikar and colleagues conducted a systematic review of the evidence for their use in low- and middle-income countries. In six trials enrolling 1853 infants, failure to improve with the primary device was observed in 3.2% of cases with the LMA and 13.8% of cases with the face mask, number needed to treat 9. In four trials enrolling 611 infants, intubation was required in 3.1% vs 17.2% (NNT 7). There were not sufficient cases to reach clear conclusions regarding differences in major adverse outcomes. The data support increased use of these devices if resources and training permit this. ***See page F156***

MANAGEMENT OF PNEUMOTHORAX IN NEONATAL RETRIEVAL

There is variation in practice regarding the treatment of pneumothorax, with some preferring needle aspiration as a first approach, rather than drain insertion. In the neonatal unit both options are provided easily and drainage can be performed if aspiration proves insufficient, but in neonatal transport the challenge of drain insertion should it be required is greater. Ikhwan Hallibullah and colleagues report the experience of the Paediatric, Infant and Perinatal Emergency Retrieval (PIPER) service based at the Royal Children's Hospital (RCH), Victoria, Australia with the management of infants referred for transport between 2016 and 2020, who had pneumothoraces. There were 174 infants included in the report. A chest drain was inserted in 82 (47%). There were 95 infants treated with needle aspiration and 40 of them subsequently avoided a chest drain. No infant required a chest drain or a needle aspiration during transport. None of the 12 infants transported by air without a chest drain deteriorated during transport. The data suggest that selected infants with pneumothorax who require transport can be transported safely without chest drain insertion, shortening stabilisation time and avoiding chest drain insertion altogether in a significant number. ***See page F182***

THE FUTURE OF CLINICAL TRIALS IN THE DELIVERY ROOM

Colm O'Donnell and colleagues review the challenges in performing high quality research studies of delivery room interventions and call for a change in our approach to clinical trials in this setting. International collaboration will be required to recruit large enough numbers of infants, with simple protocols, use of deferred consent and objective short-term outcomes. They use these principles to outline a proposed multicentre stepped-wedge cluster randomised trial of tactile stimulation at birth in babies born before 32 weeks gestation to see if this increases oxygen saturation at 5 min of life. They are aiming to study 3000 babies born in around 40 hospitals in Europe and to use this a springboard for the study of other interventions. ***See page F102***

CHEST COMPRESSION RATES DURING CARDIOPULMONARY RESUSCITATION

Some clinical uncertainties regarding resuscitation will be particularly difficult to resolve with high quality studies in human infants due to their rarity and urgency. The present recommendation for cardiopulmonary resuscitation in the new-born is that compressions should be provided at around 90 compressions per minute. This is a lot slower than the heart rates observed in sick infants and is based on extrapolated information and pragmatic assessment of how efficiently they can be delivered. Marlies Bruckner and colleagues studied the effect of different compression rates on cardiac output in term piglets that had been asphyxiated to asystole. Compressions were delivered by an automated machine and compression rates from 60 to 180 beats per minute were studied. There was a progressive increase in stroke volume and carotid blood flow up to a compression rate of 150 beats per minute and an increase in cardiac output and blood pressure up to a compression rate of 180 beats per minute. The data suggest a need for further exploration of the best approach to neonatal cardiopulmonary resuscitation. ***See page F200***