Prostaglandin use in neonatal transport

The West of Scotland transport team introduced a protocol for management of neonates on intravenous prostaglandin that necessitated intubating infants on over 5 ng/kg/min prostaglandin for <48 hours. The respiratory management of infants on prostaglandin during transfer is controversial and often subjective. We reviewed the safety profile of our prostaglandin transports over a two year period and compared our policy with other transport services in the United Kingdom to try to provide additional information on guidelines for safe transfer.

Transfers were identified by manually searching the transport records and case notes. A postal questionnaire was sent to the lead consultant of all transport services in the United Kingdom about factors that influence transport of infants on prostaglandin including dose and length of time on prostin, mode and length of transfer, and clinical stability.

Thirty seven transfers were identified with a dose range of 5–100 ng/kg/min (median 10 ng/kg/min); 15% of babies were receiving a dose of 5 ng/kg/min and 85% ≥ 10 ng/kg/min.

Length of time on prostaglandin was: 68% <24 hours, 16% 24–48 hours, and 16% >48 hours.

Thirty infants (81%) were ventilated before transfer, 12 by the transport team and 18 by the referring hospital. Of the infants ventilated by the referring hospital, most were for clinical condition (most commonly cyanosis before establishment of a diagnosis) although 5/18 were at the request of the transfer team. Most infants (90%) were ventilated because they were on a higher dose of prostin (≥ 10 ng/kg/min) and the duration of treatment was short (<48 hours). Two infants were ventilated despite receiving low dose prostin (5 ng/kg/min) as they had been on this for under 24 hours. One infant was on low dose prostin for several days and was intubated for clinical instability. Seven infants were transferred self ventilating (all those on 5 ng/kg/min prostin for >48 hours).

Distance transferred ranged from 6 to 490 km (road transfer <10 km, eight infants; road transfer 20–150 km, 12 infants; air transfer >200 km, 17 infants). The most common diagnoses were hypoplastic left heart syndrome (35%) and pulmonary atresia variants (27%). No prostaglandin related incidents or complications of intubation or ventilation were recorded during the transfer.

The rate of response to the questionnaire was 91%. In 70% of transport services, there was no protocol guiding management of prostaglandin transfers. Factors cited that influence respiratory management included dose and length of time on prostaglandin, clinical condition of baby, and distance and mode of transfer. Existing protocols specifying dosage advocated ventilation of infants on >10 ng/kg/min for long distance transfers or clinical instability. Most transfers were by specialist registrars (80%). Only one unit had recently audited their transfers.

We conclude that a protocol based approach to airway management is safe during transfer for our population of neonates. The potential complications of electively ventilating infants, especially those with parallel circulation such as hypoplastic left heart syndrome, do, however, need to be recognised. We recommend audit of prostaglandin transfers and consideration of a protocol appropriate to each region.

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Plasma leptin, insulin, and neuropeptide Y response to feeding in newborn infants

Although the functions and regulation of leptin, insulin, and neuropeptide Y (NPY) are well studied, their role and regulatory mechanisms in neonates are poorly understood.

We have reported that, compared with umbilical concentrations, on the 4th day of life fasting plasma leptin and insulin concentrations are significantly decreased, and plasma NPY concentrations increased.¹ The effects of feeding on plasma concentrations of these hormones are controversial^{2–3} or have not been studied.

We have investigated the effects of breast feeding on plasma concentrations of leptin, insulin, and NPY in 30 healthy, full term neonates, exclusively breast fed, on the 4th day of life.

At 30 minutes after breast feeding, the mean (SD) plasma concentrations of leptin and insulin increased (leptin from 4.91 (6.05) to 9.85 (8.09) ng/ml ($p < 0.001$), and insulin from 3.12 (1.24) to 9.41 (6.06) μ U/ml ($p < 0.001$)), whereas NPY did not show any significant change (73.87 (29.22) v 69.37 (26.52) pmol/l).

In adult humans, plasma leptin concentrations do not change in response to meals, suggesting that, in the regulation of energy balance, leptin works as a long term adiposity signal rather than a short term meal related factor.⁴

The discovery that the stomach can also produce and store leptin and release it in response to food intake has suggested that leptin may also have a role in the short term control of energy balance.^{5–6} Recently, it has been shown that the onset of leptin mRNA expression and leptin synthesis in the human stomach takes place around the 11th week and increases sharply in older fetuses.⁷ Moreover, in neonatal rats, it has been shown that orally supplied leptin is directly taken up by the immature stomach and may regulate short term feeding.⁸ The early post-feeding increase in plasma concentrations of leptin, observed by us, in agreement with Cinaz *et al.*,² may suggest that the neonate adsorbs leptin produced by the gastric mucosa. This leptin may play a potential role in acute regulation of feeding behaviour of neonates, and, downregulating endogenous leptin produced by adipocytes, it could be the cause of the fasting plasma leptin decrease observed on the 4th day of life.

The lack of effect of feeding on plasma concentrations of NPY reinforces our hypothesis that the high circulating concentrations of NPY in the neonate are only due to neuronal release of NPY, in response to the general activation of the sympathetic system present at birth.

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References

- 1 Mami C, Manganaro R, Saitta G, *et al.* Plasma leptin, insulin, and neuropeptide Y concentrations in infants. *Arch Dis Child Fetal Neonatal Ed* 2005;**90**:F86–7.
- 2 Cinaz P, Sen N, Bideci A, *et al.* Plasma leptin levels of large for gestational age and small for gestational age infants. *Acta Paediatr* 1999;**88**:753–6.
- 3 Shimizu T, Satoh Y, Shoji H, *et al.* Lack of plasma leptin response to feeding in newborn infants. *J Paediatr Child Health* 2004;**40**:42–3.
- 4 Joannic JL, Oppert JM, Lahlou N, *et al.* Plasma leptin and hunger rating in healthy humans. *Appetite* 1998;**30**:129–38.
- 5 Bado A, Lévasscur S, Attoub S, *et al.* The stomach is a source of leptin. *Nature* 1998;**394**:790–3.
- 6 Peters JH, McKay BM, Simasko SM, *et al.* Leptin-induced satiation mediated by abdominal vagal afferents. *Am J Physiol Regul Integr Comp Physiol* 2005;**288**:R879–84.
- 7 Aparicio T, Kermorgant S, Darmoud D, *et al.* Leptin and Ob-Rb receptor isoform in the human digestive tract during fetal development. *J Clin Endocrinol Metab* 2005;**90**:6177–84.
- 8 Sanches J, Oliver P, Miralles O, *et al.* Leptin orally supplied to neonate rats is directly uptaken by the immature stomach and may regulate short term feeding. *Endocrinology* 2005;**146**:2575–82.

Circulatory effects of antenatal betamethasone therapy in low birthweight infants

We read with great interest the paper of Vural *et al.*¹ on the cardiac effects of single course antenatal betamethasone in preterm infants. In line with the observations of Dimitriou *et al.*² on the effect of betamethasone on neonatal renal function, there is still need to further document the impact of antenatally administered steroids on various extra-pulmonary outcome variables such as cardiovascular stability.

We therefore would like to report on the use of dopamine in the first week of life in a cohort of 282 consecutively admitted low birthweight (LBW) infants—that is, <1500 g—of whom 243 survived until discharge. Our algorithm to initiate dopamine has recently been described.³

Data on antenatal betamethasone were not retrieved in six cases, resulting in observations on 237 LBW survivors. The clinical characteristics of the LBW infants either treated ($n = 178$) or not ($n = 59$) before birth with betamethasone can be summarised as follows (betamethasone/no betamethasone): number = 178/59; mean (range) gestational age (weeks) = 29 (24–34)/30 (24–35) (NS); mean (SD) birth weight (g) = 1142 (272)/1062 (303) (NS); mean (range) CRIB score = 2 (0–13)/2 (0–13) (NS); inotropic agents before day 7 = 38%/46% (NS); mean (range) duration (hours) of inotropic agents in first week when all survivors are included = 0 (0–168)/0 (0–144) (NS), and when only LBW infants treated with inotropic agents are included = 50 (4–168)/56 (8–144) (NS).

In brief, we were not able to find any difference in the administration or duration

of administration of inotropic agents in the first week of life in LBW infants.

There is still uncertainty about the effect of prenatal steroids on various extrapulmonary outcome variables. As the positive effect of maternal administration of steroids on neonatal respiratory distress syndrome has been repeatedly demonstrated, a randomised controlled trial approach to assess the effect of prenatal steroids on these extrapulmonary outcome variables is no longer ethical or feasible. However, prospective collection of these variables, as was done by both groups mentioned above, is still of clinical relevance, especially if we take into account that the large randomised controlled trial studies were performed in the 1980s and 1990s and therefore potentially only in part reflect the populations admitted to our present day units.

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References

- 1 Vural M, Yilmaz I, Oztunc F, *et al.* Cardiac effects of single course antenatal betamethasone in preterm infants. *Arch Dis Child Fetal Neonatal Ed* 2006;**91**:F118–22.
- 2 Dimitriou G, Kavvadia V, Marcou M, *et al.* Antenatal steroids and fluid balance in very low birthweight infants. *Arch Dis Child Fetal Neonatal Ed* 2005;**90**:F509–13.
- 3 Allegaert K, Debeer A, Cossey V, *et al.* Dopamine is not an independent risk factor for reduced amikacin clearance in extremely low birth weight infants. *Pediatr Crit Care Med* 2006;**7**:143–6.

BOOK REVIEWS

Intensive care of the fetus & neonate, 2nd edn

Edited by Alan R Spitzer. Published by Elsevier, 2005, £99.00, pp 1472. ISBN 1560535121

As I was on the look out for a good reference book on neonatology, this book crossed my path at just the right time. As a basic reference text it did not disappoint. I was particularly impressed with the good grounding it provides in fetal medicine as well as covering neonatal intensive care. Although on the whole I like the book a lot, it does not quite meet my expectations in terms of the comprehensiveness of its subject matter.

The book starts well with an interesting and informative history of fetal and neonatal intensive care. It then moves on to chapters covering fetal development, assessment, diagnosis, and intervention. These chapters, along with the subsequent sections on maternal factors influencing neonatal outcome and management of the high risk pregnancy, are a fantastic resource for those who, like me, are somewhat rusty when it comes to the intricacies of fetal

medicine. I enjoyed reading these chapters and am likely to refer to them repeatedly.

Logically enough, the text moves on to give a good, robust coverage of neonatal resuscitation and newborn examination. Following this, the lion's share of the book is concerned with neonatal intensive care. This is introduced by a rather hotchpotch mix of chapters on radiology, thermal regulation, and the evolving role of nurse practitioners, which have been squeezed in before the major chapters covering body systems. As an aside, this is not the only place in the book where the topic order might be felt to be slightly unusual or counter-intuitive.

The chapters on body systems give detailed coverage of all of the more common and important neonatal conditions. They also give important consideration to related topics such as different modes of ventilation (which are given a chapter each), follow up of the high risk neonate, nutrition, fluid and electrolyte physiology, and transfusion therapy to name a few. To complete the book, there are sections on surgical management of the neonate, which concentrate on general surgical care issues and urological problems, followed by a brief look at some epidemiological and ethical considerations.

At first glance, the book seems to be fairly comprehensive, but, on closer examination, I felt that there was less mention of several organ systems than I would have liked: there are no chapters specifically covering neonatal dermatology or orthopaedic problems, for example. I was also surprised to find several conditions notable by their absence. To confirm this impression, I looked up a random selection of conditions that I had encountered in the neonatal intensive care setting in the last five years. Conditions from this list that I did not find in the book included Edward syndrome (trisomy 18), CHARGE syndrome, epidermolysis bullosa, and osteogenesis imperfecta.

On the whole I really liked this book and feel it will be a useful addition to my reference collection. It probably caters better for those looking for a broad overview of fetal and neonatal intensive care than for those who want a more fully comprehensive text that includes less common neonatal problems.

C L Smith

Congenital and perinatal infections: a concise guide to diagnosis

Edited by Cecilia Hutto. Published by The Humana Press, 2005, £70.00, pp 328 (hardback). ISBN 1588292975

Having been taught from an early and impressionable age that the first answer to most questions in neonatology is "infection", it is discouraging that, despite many years of advances in neonatal intensive care, the diagnosis and treatment of infection remains a considerable challenge. This is particularly true of the extreme preterm infant, whose improved survival is accompanied by an increase in nosocomial infections. Many units throughout the world have seen an extension of the antimicrobial repertoire as organisms become increasingly resistant to conventional broad spectrum antibiotics.

I approached this book with interest after a rash of congenital and acquired infections locally. The book is divided into two sections, the first tackling the sometimes baffling array of serological, immunological, and molecular tests simply but thoroughly. An excellent chapter on placental pathology reminds the reader of how much information this often overlooked organ can yield.

The second part of the book deals with specific infections, and the chapters are presented in a standard format which makes dipping in and out easy, despite the almost wall to wall text. The emphasis of this book is on diagnosis, but there is also considerable information on epidemiology, transmission risks, and clinical features of each infection. However, from a clinician's perspective, it is frustrating that the authors chose not to include the areas of management and outcome as they are "well detailed in many other sources".

Although the epidemiological emphasis is on the United States, the author extends appeal to the developing world, and chapters include the diagnosis of malaria, syphilis, and tuberculosis. In contrast, common bacterial infections are given little coverage, except a good chapter on group B *Streptococcus* and the controversies surrounding screening and treating. Disappointingly, the coliforms are dealt with in a single short paragraph, and coagulase negative *Staphylococcus* does not receive a mention, despite being the most common neonatal pathogen across the developed world. Moreover neonatal tetanus, which accounts for 7% of all early neonatal deaths world wide, is ignored. Instead two chapters are dedicated to the epidemiology and diagnosis of congenital lymphocytic choriomeningitis and dengue virus, of which there are only a few small case series in the literature.

The book is heavy on text with a few tables, and only two conditions are illustrated with poor quality black and white photographs. Priced at £75, colour photographs would have been welcome, particularly as the emphasis throughout is on laboratory diagnosis in conjunction with clinical signs.

The strength of this book is the diagnostic expertise and would undoubtedly be found most useful by microbiologists in the perinatal field. It provides good information on epidemiology, range of appropriate tests, risks to mother and fetus, and spectrum of clinical features. Such detail would be invaluable for those developing a perinatal microbiological service. However, this book will fall short in many perinatologists' eyes in not providing guidance on treatment and information on outcome, both of which could have been handled reasonably succinctly at the expense of some of the more exceptional diseases.

J-C Becher

CORRECTION

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M E Abdel-Latif, B Bajuk, J Oei, *et al.* (*Arch Dis Child Fetal Neonatal Ed* 2006;**91**:F251–6). The author list for this paper should be: M E Abdel-Latif, B Bajuk, J Oei, T Vincent, L Sutton, K Lui, and the NICUS Group.