As an SHO, I bought the first edition of the Manual in 1982. It was a survival guide which provided safe certainties in the small hours of the night. It was small, light, and compact. There was no competition: the Robertson Manual was the book to have!

Nearly 20 years on, where has the 4th edition taken us? Bigger, certainly: a behemoth of a “small” manual with 550 pages. Not much taller or wider than its predecessors, but much thicker, the rather thin and closely typeset pages distinctly reminiscent of a Bible. Thirty four chapters and eight appendices. There’s an awful lot of information in here.

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Residents are increasingly likely to be faced with ventilators that read out the tidal volume, minute volume, and IAP, plus pressure-volume curves. They want to know how to use this information. They want to know what to do when babies on trigger ventilation drop their Pco2 to embarrassingly low levels. They want the formula for calculating the fractional concentration of sodium. They need to know that separate chest and abdomen radiographs give much better radiological information than “babygram” pictures. Sadly, they will be disappointed if they try to find such information in this book.

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long term outcome. A section on medico-legal issues makes interesting reading, although it is not directly applicable to the British judicial system. Surprisingly little importance is attached to feeding, and yet studies of the controversies surrounding the use of postnatal corticosteroids to treat chronic lung disease and the risk of cerebral palsy, but otherwise the range of topics is exhaustive. Particular care is also taken to relate the bedside management to the background neuroscience—for example, the neuroprotective effect of brain cooling. Readers will be encouraged to catch up with subsequent developments as they emerge in the journal.

Weaknesses are few. The section on imaging of brain injury is thorough, and as expected well illustrated. However, it leaves the reader wishing for more information on the prognostic value of MRI in particular. Other sections would have been enhanced by greater use of illustrations—for example, I was disappointed that a section on congenital malformations fails to include a single illustrative image.

In summary, this is a comprehensive account of an area of vital importance to obstetricians, neonatologists, and paediatric neurologists. It should prove to be a useful reference for specialists in these fields.

References

LETTERS

Thickening milk feeds may cause necrotising enterocolitis

Extremely low birthweight infants have the highest risk of developing necrotising enterocolitis (NEC). We report on two infants who developed fatal NEC while established on enteral feeds. A common anecedent was recent treatment with Carobel.

An 820 g boy and a 752 g girl, both of 25 weeks gestation, were fully established on enteral feeds with expressed breast milk by day 12 and 18 respectively. Non-specific symptoms were attributed to gastro-oesophageal reflux (GOR), which was empirically managed by thickening milk feeds. Infant Carobel (Cow & Gate) was started on postnatal day 12 and 24. Onset of NEC was day 26 and 30, with death one day later.

Carobel is unlicensed in the United Kingdom. The manufacturer advises that two to three levels scoops may be added per 60-90 ml milk, but mentions no precautions or contraindications for preterm infants. Its use in preterm infants may have crept in since the withdrawal of cisapride in July 2000. Although feed thickening may reduce the frequency and volume of regurgitation, acid reflux remains unaffected, and a paradoxical increase in the occurrence of GOR has been described. Moreover, milk thickened with carob bean gum is less nutritive because of the presence of pectin and cellulose,

* course with complete remission attained after puberty. The overall incidence of involvement of mucous membranes of the oral cavity, eyes, and external genitalia is 57%, 40%, and 72% respectively. However, the mucosal involvement is not life threatening.

The other neonatal case of linear IGA bullous disease reported in the literature also showed serious mucosal involvement. It manifested as respiratory failure requiring treatment by extracorporeal membrane oxygenation, oesophageal dysmotility with choking during feeding, and blindness as a result of conjunctival scarring. In both these neonatal cases, complete remission was attained after the unsettled neonatal period. Hence, linear IGA bullous disease with onset in the neonatal period contrasts sharply with the classical presentation of the childhood disease in having serious mucosal involvement and a non-relapsing course.

We hope that our report serves as a reference for neonatologists and dermatologists who may encounter similar cases in the future.

Vertical transmission of *Citrobacter freundii*

An infant developed early respiratory distress after delivery at 34 weeks gestation after prolonged rupture of membranes. *Citrobacter freundii* was cultured from a maternal mid-stream urine sample at delivery. *C. freundii* is resistant to ampicillin but sensitive to gentamicin, cephalosporins, and ciprofloxacin, which was isolated from neonatal blood cultures taken on admission. Gram negative rods were seen on microscopy of cerebrospinal fluid (CSF), with no white cells and 730 red cells per high power field. CSF protein was 1.26 g/l and glucose 3.0 mmol/l, with blood glucose of 4.9 mmol/l. No organisms grew on CSF culture. Ampicillin and gentamicin were discontinued, and ciprofloxacin and cefotaxime started for a three week course. Serial cranial ultrasound and computed tomography scans showed no evidence of intracranial abscess or ventriculitis. At 1 year of age the infant is neurodevelopmentally normal.

Neonatal infection with *Citrobacter* species is usually acquired in a nosocomial fashion, and causes septicaemia, meningitis, and brain abscesses associated with a high morbidity and mortality. Eleven cases of vertically acquired *Citrobacter koseri* infection have been reported. In the only previous report of vertical transmission of *C. freundii* described a 23 month infant in whom the organism was identified from maternal high vaginal swab and infant gastric aspirate, but not from blood cultures. Neonatal *Citrobacter koseri* with meningitis, as in our patient, has not been reported previously.
replicate within brain capillary epithelium, perhaps accounting for the propensity of this organism for causing cerebral abscesses.3 However, including this case, this complication appears to be confined to late onset disease, with possible explanations being the early use of antibiotics, and absence of a putative virulence factor.

The combination of cefotaxime and an aminoglycoside is recommended for neonatal Gram negative meningitis, but CSF concentrations of gentamicin may only be marginally above the minimum bactericidal concentration of Gram negative organisms.4 Ciprofloxacin has been shown to be effective in Gram negative meningitis, and should be considered in the treatment of this condition.5

T J Malpas, J J Munoz
Department of Paediatrics, The General Hospital, Jersey JE1 3QS, Channel Islands; t.malpas@gov.je

I Muscat
Department of Pathology, The General Hospital, Jersey
doi: 10.1136/adc.2003.043398

References

Recruitment failure in early neonatal research

Rates of neurodevelopmental handicap are high among extremely low birthweight survivors, and the first 48 postnatal hours probably give the greatest opportunity for preventing damage. However, at this time, families are in turmoil and may have difficulty in coming to terms with a small baby in intensive care. We recently had to abandon an observational, non-invasive study because of practical difficulties arising from the new Research Governance Framework,1 and we would like to share this experience, and its implications, with the research community.

We needed parental consent for the study, which had local research ethics committee approval. Babies had to be < 1500 g birth weight, > 25 weeks gestation, < 48 hours old, ventilated, with an arterial line, and no prior intervention for circulatory compromise. The last two requirements meant that, in reality, babies had to be recruited within the first 12 hours. A non-invasive measurement of peripheral oxygen consumption6 was to be made regularly over 24 hours. We aimed to recruit 50 babies over two years.

When an eligible baby was admitted, the parent(s) were given further information before consent was sought a minimum of four hours later. Postnatal recruitment proved difficult. The need to give parents time to consider their decision meant that the opportunity for starting the study was often missed because of changes in the baby’s clinical condition.

Figure 1 Recruitment to research project on neonatal unit (NNU) over 12 month period.

With additional local research ethics committee permission, we tried to recruit women at high risk of delivering before term from 25 weeks gestation. The consent process was more complex in this group, as the explanation had to include information about standard neonatal care and procedures. Parents in this group were given 24 hours to come to a decision. Figure 1 shows that, of 28 eligible babies, only five were recruited. Eight out of nine mothers approached antenatally gave consent, but only two of their babies were studied, as three did not meet the entry criteria and the other three were born elsewhere.

What went wrong? Since the Griffiths report,7 the emphasis has been on obtaining fully informed parental consent, and the research team has to ensure that the parents thoroughly understand the research and its implications. Research where parents signed consent forms, but later claimed that they did not understand the research, was heavily criticised.7 Consequently researchers are reluctant to approach parents who are in any way distressed, because of the difficulty in ensuring valid consent. If it is important for early neonatal research to continue, we urgently need agreement on a sensitive, humane, and realistic framework that is acceptable to both parents and clinical researchers alike.

S Nicklin, S A Spencer
Neonatal Unit, University Hospital North Staffordshire (NHS) Trust, Newcastle Road, Stoke on Trent ST4 5GG, UK; andy.spencer@uhns.nhs.uk
doi: 10.1136/adc.2003.043711

Gestational age in the literature

In neonatology, the correct gestational age (GA) is extremely important, as the viability and survival of the premature baby depend on it. A difference of a few hours or a day can have a substantial impact on the survival and long term morbidity of premature babies.

Doctors are trained to report the GA of a premature baby in exact days—for example, 26 + 4 (GA = 26 completed weeks and 4 days). Reporting the GA in this format helps in understanding and assessing the postnatal and maturational age of premature babies. One would therefore expect GA to be reported exactly in the literature, especially in articles, studies, and trials dealing with survival and morbidity in premature babies. In fact, descriptions of GA are extremely ambiguous in most articles. An example of this ambiguity is survival at 26 weeks GA is...
Fever in the neonatal period

This is in reference to the recent article by Maayan-Metzger et al. The clinical implication of the study is questionable. It is difficult to make a prospective decision on retrospective data. What should a clinician do if a microscopically 5 day old baby has a fever of 37.9°C? There is no problem in labelling the infant as having non-specific fever, which may be due to dehydration. The problem is to decide on the treatment. Unfortunately, the study in question not only lacks that information but also supports treatment with antibiotics. This inference is drawn from the results of the study, stating that 108 of 122 healthy asymptomatic babies drawn from the results of the study, stating treatment with antibiotics. This inference is based on the fact that the study did not have this information but also supports the treatment of asymptomatic babies, exact GA can be of immense help. As the limits of viability and survival are stretched, doctors need to be very clear in their minds about the exact age of the premature baby.

In view of the above, we propose that the reporting of the treatment should be uniform. It should be described in exact details that weeks after the birth. B V Pai, V A Pai

Royal Sussex Count Hospital, Brighton, Sussex, UK; binapai@hotmail.com
doi: 10.1136/adc.2003.040899

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S Manzar

Special Care Baby Unit, Royal Hospital, PO Box 1351, Muscat 111, Sultanate of Oman; shabihman@hotmail.com
doi: 10.1136/adc.2003.039735

Reference

Home phototherapy in the United Kingdom

Although successful home treatment of neonatal jaundice using fibre-optic phototherapy units has been practiced elsewhere, we are not aware of any such provision in the United Kingdom. We have introduced a regional home phototherapy programme in Tayside, Scotland and wonder if our initial experience would be of interest to others.

Before introducing the service, hospital and community midwives undertook training covering inclusion criteria (physiological jaundice in well, term infants), the treatment protocol, equipment (Sunlight, Ohmeda), and the assessment of parental competence. The protocol conditions were: a daily capillary serum bilirubin (SBR), discussing all results with a paediatrician; basing treatment on SBR results with the infant and an SBR measured after discontinuing phototherapy. Parents underwent a one hour “training” session (equipment use and advice on feeding, skin care, and temperature control) and were given written advice. Tayside Committee on Medical Research Ethics advised that ethical approval for the programme and written consent were not required, as the treatment being offered was not novel.

Between February and August 2002, 28 families were offered home phototherapy in Tayside: six refused (difficulties with feeding, distance from home to hospital, and parental choice). The mean birth weight was 3245 g (range 2240–4220), with a median gestation of 38 weeks (range 35–41). Mean maternal age was 30 years (range 17–41). Twenty (91%) infants were breast fed. Ten were first born. Seven families lived in affluent areas and two in areas of high deprivation. Phototherapy started at a median age of 5.5 days (range 1–13). Eight infants received all their phototherapy at home. Mean treatment duration was 47.3 hours (range 7.5–97.0) with a median decrease in SBR of 16.0 μmol/l (range from a fall of 50 μmol/l to a rise of 53 μmol/l in one case). Community midwives spent about 60 minutes on the first home visit. Subsequent visits were shorter. Poor compliance, without compromise to either infant, was identified in two families and rectified quickly. No other adverse incidents were reported, and there was no equipment failure. All parents preferred home phototherapy to inpatient treatment. Community midwives have been happy to continue the programme.

We believe this is the first report of a home phototherapy programme in the United Kingdom. With appropriate training and enthusiastic community support, it appears to be feasible, safe, and well accepted by families and staff. We would encourage others to consider establishing such programmes.

We are grateful to the rest of the Tayside Home Phototherapy Project Team (J Dalzell, A Jarvis, M Meldrum, V Samson) and the community midwives who contributed to the success of the project. This project was supported by a grant from the Scottish Executive Health Department – Innovative Fund for Children’s Services.

M Walls, A Wright, P Fowlie Neonatal Intensive Care Unit, Ninewells Hospital and Medical School, Dundee DD1 9SY, Scotland, UK

L Irvine Department of Epidemiology, University of Dundee, Ninewells Hospital and Medical School

R Hume

Maternal and Child Health Sciences, University of Dundee, Ninewells Hospital and Medical School

Correspondence to: Dr Fowlie; peter.w.fowlie@tuftscot.nhs.uk
doi: 10.1136/adc.2003.034868

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