LETTERS TO THE EDITOR

Chronic lung disease and subsequent respiratory symptoms

EDITOR—We read with interest the recent paper by de Winter *et al.*¹ and to determine more clearly how often chronic lung disease is associated with later respiratory symptoms, we studied a group of infants with chronic lung disease, together with a matched control group.

Sixty nine infants born at Liverpool Maternity Hospital between January 1980 and December 1985 were identified as having chronic lung disease (having received mechanical ventilation during the first two weeks of life for more than 24 hours, and at 28 days of age having required supplementary oxygen, associated with abnormalities of the lung parenchyma on the chest radiograph).

A respiratory questionnaire was sent by post to those 55 children who were still alive. This questionnaire was also sent to parents of a control group of children (n=42) who received mechanical ventilation for at least 24 hours within the first two weeks of postnatal life but did not develop chronic lung disease, and who were matched for sex, year of birth, and gestation to the nearest week, and birthweight to the nearest 100 g. Following initial mailing and one repeat mailing to all non-respondents, 42 (72%) of parents with infants with chronic lung disease and 24 (52%) of parents with control infants completed the questionnaire. The median age of the chronic lung disease group was 8 years (range 6–11) and that of the control group was 7 years (range 6–11).

There was no significant difference between the two groups with respect to: birthweight (chronic lung disease 1040 g (650–2150) *vs* control 1080 g (858–2100)), gestation (chronic lung disease 28 (25–34) *vs* control 29 (25–34)), sex and parental smoking. Parental atopy, defined as asthma, eczema, or hayfever, diagnosed by a physician in either parent, was more common in infants with chronic lung disease (52%) compared with the control group (21%) (*P*<0.05). There was a higher incidence of phlegm with colds, wheeze, and effort intolerance in the chronic lung disease group compared with the control group. The incidence of respiratory symptoms in those infants who were oxygen dependent at 36 weeks postmenstrual age were even higher (table 1).

Logistic regression analysis using each respiratory symptom as the dependent variable revealed that the increased incidence of phlegm with colds and wheeze among the

chronic lung disease group was related entirely to the increase in parental atopy in this group, although effort intolerance was still independently associated with chronic lung disease (odds ratio 2.33, 95% confidence interval 1.01–5.37). We also performed logistic regression using chronic lung disease as the dependent variable and parental smoking, parental atopy, gestation, birthweight and male sex as the independent variables and found that the only significant independent predictor of chronic lung disease was parental atopy (odds ratio 2.12, 95% confidence interval 1.07–4.21). Our findings do not agree with those of de Winter *et al.*, but support the work of Nickerson *et al.*, who suggested that there is an increased incidence of a family history of asthma in infants with chronic lung disease.² We used a different definition of chronic lung disease (oxygen dependency at 28 days) which may have resulted in the inclusion of a higher number of very low birthweight infants.

We have shown that the incidence of respiratory symptoms in survivors of chronic lung disease some years later is high and although chronic lung disease is a multifactorial disease, our work suggests that a family history of atopy may increase an individual's predisposition to the disease.

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1 de Winter JP, van Sonderen L, van den Anker JN, Merth IT, Brand R, van Bel F, *et al.* Respiratory illness in families of preterm infants with chronic lung disease. *Arch Dis Child* 1995; 73: F147–F52.

2 Nickerson BG, Taussig LM. Family history of asthma in infants with bronchopulmonary dysplasia. *Pediatrics* 1980; 65: 1140–4.

Changes in pulmonary artery pressure in infants with respiratory distress syndrome after treatment with Exosurf

EDITOR—Hamdan and Shaw,¹ with their confirmation of the finding of Kaapa *et al.*² that surfactant therapy is accompanied by a fall in pulmonary artery pressure (PAP), have made an important contribution to the understanding not only of the mechanism of surfactant therapy, but also perhaps of one of its principal complications – pulmonary haemorrhage. If the fall in PAP is accompanied by an increase in pulmonary artery flow, and if both these changes occur, as they imply, sooner than would otherwise be expected in preterm infants with respiratory distress syndrome, this might explain the increased incidence of pulmonary haemorrhage seen in certain controlled trials of surfactant therapy.³ This might also explain two paradoxes, that the increase in pulmonary haemorrhage occurs despite a reduction in the incidence of

persistent patent ductus arteriosus, and that pulmonary haemorrhage is reported to occur in babies whose condition is otherwise improving.

Their findings may also partly explain the reduction in the incidence of persistent pulmonary hypertension seen in the babies treated with surfactant, in the largest double blind placebo controlled trial.⁴

Discussing the possible mechanism of the fall in PAP, they speculate that Exosurf may act primarily as a pulmonary vasodilator, on the basis of the lack of change in static compliance seen with this surfactant in the study of Stenson *et al.*⁵ However, if, as many suggest, the initial effects of surfactant therapy are related to changes in functional residual capacity rather than in compliance,⁶ the increase in number of ventilated alveoli might itself be responsible for the fall in PAP, as well as for an increase in effective pulmonary flow (blood coming into contact with ventilated alveoli), explaining the early improvements in oxygenation. In this respect the effects of surfactant therapy have been likened to those of continuous positive airways pressure (CPAP), and it would be interesting to know if a similar fall in PAP is seen with the use of CPAP, and also what happens with the use of surfactants other than Exosurf.

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1 Hamdan AH, Shaw NJ. Changes in pulmonary artery pressure in infants with respiratory distress syndrome following treatment with Exosurf. *Arch Dis Child* 1995; 72: F176–9.

2 Kaapa P, Seppanen M, Kero P, Saraste M. Pulmonary hemodynamics after synthetic surfactant replacement in neonatal respiratory distress syndrome. *J Pediatr* 1993; 123: 115–9.

3 Rogers D. Pulmonary haemorrhage, surfactant, and low-birthweight babies. *Lancet* 1993; 341: 698.

4 Long W, Corbet A, Cotton R, Courtney S. The American Exosurf Neonatal Study Group I, The Canadian Exosurf Neonatal Study Group, *et al.* A controlled trial of synthetic surfactant in infants weighing 1250 g or more with respiratory distress syndrome. *N Engl J Med* 1991; 325: 1696–703.

5 Stenson BJ, Glover RM, Parry GJ, Wilkie RA, Laing IA, Tarnow-Mordi WO. Static respiratory compliance in the newborn. III: Early changes after exogenous surfactant treatment. *Arch Dis Child* 1994; 70: F19–24.

6 Milner AD. How does exogenous surfactant work? *Arch Dis Child* 1993; 68: 2534.

BOOK REVIEWS

New therapies for neonatal respiratory failure. A physiological approach. Edited by Bruce Boynton *et al.* (Pp 357, £65 hardback.) CUP, 1994. ISBN 0-521-43161-1.

In parallel with the rapid changes taking place in molecular biology, techniques of neonatal mechanical ventilation have leapt forward over the past few years. ECMO, high frequency conventional ventilation, and high frequency jet and oscillatory ventilation are all available to us: liquid ventilation is on the horizon. But there are few comprehensive sources of information about these

Table 1 Incidence of respiratory symptoms in CLD, control group, and those infants dependent on oxygen at 36 weeks postmenstrual age

	CLD (n=42)	Controls (n=24)	Oxygen dependent at 36 weeks post menstrual age (n=19)
Cough	16 (38%)	6 (25%)	8 (42%)
Phlegm with cold	30 (71%)*	9 (38%)	17 (89%)
Ever wheezy	28 (67%)*	9 (38%)	16 (84%)
Wheezy in past 12 months	24 (57%)	6 (25%)	15 (79%)
Asthma diagnosed	19 (45%)	4 (17%)	13 (68%)
Current treatment	10 (25%)	2 (8%)	6 (32%)
Effort intolerance	15 (35%)*	2 (8%)	10 (53%)

P*<0.05, *P*<0.01 when compared with controls.

techniques other than the lucid chapters of this book.

The central theme, respiratory failure in the newborn, is dealt with from a mainly physiological perspective. The aim is to provide core concepts, not recipes for clinical practice. This may sound somewhat arcane but the book is anything but dry. The editors have introduced a new device to enliven the text – individual comments by guest experts, at points throughout the book. Haven't you often wanted to argue with the author while reading a paper or textbook? The expert commentators do this for you. Some of the comments are based on personal observation. For instance, I very much like Os Reynolds's interjections to watch the patient if you wish to understand the concept of the time constant in ventilatory management. An epigram which struck a chord with me was the comment by Donald Null that 'the monitor works least well on the patients who need it the most'. Not all the comments are quite so imaginative. Some of the more erudite are backed up by reference to published evidence.

There are outstanding sections on the physiology of gas exchange and the pros and cons of physiological monitoring devices. A clearer description of the effects of ventilation/perfusion imbalance on gas exchange would be hard to find. Another well written and comprehensive section concerns surfactant, although much of this information is available elsewhere. One notable omission concerns the particular form of neonatal respiratory failure which poses difficulties to all who deal with newborn babies – not just those who work in neonatal intensive care units: failure to establish adequate breathing at birth. A book dealing with respiratory failure in the newborn really should tackle this problem, however difficult. It does, after all, provide the 'bread and butter' of neonatal paediatricians. In contrast, some of the sections which are included – for instance, the chapter on nitric oxide therapy – are likely to be outdated before the book reaches the library shelves.

All in all, this is a rewarding book, fun to dip into and a valuable resource for all involved in neonatal mechanical ventilation.

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Manual of neonatal emergency X-ray interpretation. P W D Meerstadt and C Gyll. (Pp 291, £18.95 paperback.) W B Saunders Company Ltd, 1994. ISBN 0-7020-1567-9.

The most enjoyable aspect of revising for medical examinations has been to pit my wits against those who have prepared practise questions in the form of data, slides, and clinical scenarios and then finding out

immediately if I was correct. I felt a similar enjoyment reading this book, which aims to teach junior doctors working in a neonatal unit to assess critically plain radiographs they are likely to encounter. Disorders likely to be encountered as emergencies are illustrated with a systematic text accompanying each radiograph. The invariable technical comments, although useful, were excessive and repetitive when reading the book from cover to cover.

The different sections take the reader from the normal through varying degrees of pathology, most of the clinical conditions being illustrated by several different radiographs. The final section details the positioning of clinical equipment and the traps that the unwary may fall into by misinterpreting artefacts.

The interpretation of neonatal films is often extremely difficult without a clinical history; such brief histories would have added to the book, particularly in cases where identical radiographic appearances may be caused by a number of conditions, the management of the baby depending on a combination of history and x-ray appearances.

Many of the films are accompanied by suggestions of further follow up films from different views to confirm the diagnosis. My main criticism is that in several of these, the diagnosis is obvious with all the information provided on the standard view, so further radiology is unnecessary.

The book contains a number of high quality x-ray images and will fill a gap in the market as a user-friendly manual for those working on neonatal intensive care units. It will also be useful to junior paediatricians about to sit examinations, and nurses aiming to become advanced practitioners.

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Baillière's Clinical Paediatrics. Pulmonary Problems in the Perinatal Period and their Sequelae. Edited by V Y H Yu. (Pp 245; £30 hardback.) Harcourt Brace, 1995. ISBN 0-7020-1934-8.

It is not an easy task to produce a comprehensive text which attempts to give adequate coverage to both common neonatal respiratory conditions and useful information on rare respiratory diagnoses, all in under 250 pages. To a large degree this book, produced as part of Baillière's Clinical Paediatrics series, achieves this successfully with its list of eminent international contributors who have written readable, comprehensive chapters with an extensive bibliography after each.

Some of the chapters inevitably reflect the individual's personal view, for example the use of shouldered tubes during neonatal

resuscitation. Other parts are disappointingly brief, for example in the discussion of the role and mechanism of the increasingly used nasal continuous positive airway pressure flow driver system employing the coander effect. There is also some variation of language and style which reflects the varied international origins of the contributors.

As there are many publications, large and small, on pulmonary problems in the perinatal period, I was keen to see what this volume offered that was new or different. The cover of Baillière's clinical paediatrics suggested that the contents of the publication would be based around international practice and research. I was however, a little disappointed to find that the majority of the chapters avoided discussing any differences in international practice nor was there much presentation of research from the interesting and controversial areas of clinical practice, tending towards the citation of well accepted facts and long published data. For example, there is discussion of the fact that antenatal steroids are useful for the prevention of respiratory distress syndrome, but the authors have rather skated over the more controversial use of thyroid releasing hormone, with a mention in just one paragraph and no discussion of any published data on its efficacy or mechanism of action.

There is a generally useful chapter on the assessment of pulmonary function, although some of the equations left me confused. The final chapter concentrates on new technology with sections on a range of treatments increasingly employed in larger neonatal units, such as high frequency oscillation and nitric oxide, and includes two pages given over to the futuristic modalities of total or partial liquid ventilation.

Overall this volume covers a wide range of pulmonary problems and treatments with the major emphasis rightly being given to the common problems, while other chapters provide one or two brief paragraphs on each of many congenital thoracic and pulmonary abnormalities which appear from time to time. The detail provided is at a level that falls between a definitive text and that found in a variety of neonatal handbooks, and would provide a good readable basis for anyone wanting to update their knowledge in the ever changing area of pulmonary management of the newborn infant.

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Correction

In a letter to the Editor entitled Interleukin-8: a potent neutrophil chemotactic factor (*Arch Dis Child*, 1995; 73: F54) the name of the third author, Carla Ottaviano, was erroneously printed as Carlo Ottaviano. We apologise to Dr Ottaviano for this mistake.