LETTERS TO THE EDITOR

Indirect estimates of pulmonary artery pressure

EDITOR,—We read with interest the paper by Hamdan and Shaw showing an increase in the Doppler derived ratio of pulmonary artery pressure to right ventricular ejection time (AT-RVET), an indirect estimate of pulmonary artery pressure (PAP), after the first and second dose of synthetic surfactant (Exosurf) in infants with respiratory distress syndrome (RDS).1 This finding is not new, as we have already shown that repeated synthetic surfactant replacements in RDS result in a fall of PAP, assessed directly with Doppler technique from this fall is not causally related, the non-causal reference method.2 3 Our early data indicated that the fall in PAP induced by surfactant was transient, subsiding in 12 hours.2 Hamdan and Shaw suggested a persistent fall after Exosurf and they postulated that this difference compared with our data could have been due to the presence of severe pulmonary hypertension, associated with tricuspid regurgitation in our sample, leading only to a transient depressive response to surfactant.1 It is true that tricuspid regurgitation may be more common in sick newborn infants than healthy ones,4 but no clearcut connection with the level of the pulmonary artery pressure has been found. On the other hand, changes in pulmonary vascular resistance are not always connected with simultaneous changes in PAP. Indeed, our new experience with similar neonatal respiratory distress syndrome (NRDS) PAP measurements, from ductal shunt flow velocity, suggest that surfactant treatment in infants with RDS may acutely decrease the pulmonary vascular resistance, but due to a subsequent increase in ductal left-to-right shunting and hence pulmonary blood flow, may result in no or only a transient reduction in PAP.5 Furthermore, our recent clinical experience suggests that in some form of perinatal pulmonary hypertension, such as in association with septic infection, the pulmonary vasoactive disturbance may not permit an acute surfactant induced fall in PAP or pulmonary vascular resistance.

We have shown before that the systolic PAP of distressed infants declines steadily, although more slowly than in the controls, during the first days of life, and that the rate of this fall is not influenced by surfactant treatment.6 Although suggested, the uncontrolled data of Hamdan and Shaw do not bring any conclusive evidence of a surfactant induced, sustained fall in PAP in infants with RDS. Furthermore, estimation of PAP using their indirect method is easily influenced by other circulatory disturbances. Our experience strengthens the widely accepted view that the assessment of PAP should be preferably done from the tricuspid regurgitant or ductal shunt flow velocity. When performed repeatedly during the acute course of RDS, these assessments may contribute significantly to the medical management of prematurely born infants.


CRIB and performance indicators for neonatal intensive care units (NICUs)

EDITOR,—We congratulate the SE Thames group on the first risk adjusted, population based study7 using CRIB (clinical risk index for babies). The study of 643 infants supports previous findings that CRIB is more accurate than other risk stratification indices.8 Comparison of hospital death.9 This has major implications for those who adjust for birthweight or gestation when comparing neonatal intensive care unit (NICU) mortality.

The authors concluded that, as risk adjusted mortality in larger NICUs was higher than in smaller ones, either CRIB was not a sensitive indicator of performance or the larger NICUs performed badly. However, the percentage of extremely preterm infants and hence mortality between large and small hospitals were wide and overlapping. The sample may have been too small to achieve adequate power, making it inappropriate to infer that larger NICUs perform worse.

Regional studies are essential, but may not be sufficiently large or representative to provide results which are clear or applicable beyond their boundaries. The SE Thames study,8 however, performs a score to adjust for risk in a national, prospective, stratified, random sample of 5415 children in the USA,9 mortality was greater in teaching hospitals (relative odds of dying 1.79; 95% confidence interval 1.23–2.61), lower in hospitals with a paediatric intensivist (relative odds 0.65; 95% CI 0.44–0.95), and was not related to size. Similar research would be valuable in a national sample of United Kingdom NICUs. We agree that other indicators of performance are needed. Nosocomial sepsis is an important outcome of neonatal care which may lead to increased mortality, costs, and length of stay, and is not adequately predicted by the initial illness severity as measured by SNAP (score for neonatal acute physiology).4 Cerebral impairments and subsequent disabilities are not always outcomes of neonatal care, and may include birth injury.5 Comparisons of NICU performance will therefore require adjustment for the risks, estimated shortly after birth, of subsequent impairment or disability.6

Although CRIB was developed to predict death, it stratified risk for hospital death if <3 weeks of gestation or <1501 g in birthweight more accurately than birthweight or gestation.7 Gestation may have an important role in predictive models for disability, especially if survivors of <32 weeks' gestation are included, as in the SE Thames study.1 However, we would re-emphasise our original caveat1 that much larger samples are needed for comparisons between institutions.

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Neonatal pulmonary arteriovenous malformation

EDITOR.—Persistent central cyanosis in a neonate with structurally normal heart on cross-sectional echocardiography presents a difficult diagnostic problem. A term neonate with central cyanosis at 30 minutes of age had an otherwise normal examination. Echocardiography in the neonatal unit revealed a normal heart, with a moderate-sized arterial duct. Failure to improve oxygenation led to mechanical ventilation and in view of the possibility of persistent pulmonary hypertension treatment was started with prostacyclin infusion. At 72 hours of age the child was randomly allocated to the conventional treatment limb of the Multicentre Randomised Controlled Trial of Neonatal ECMO. He was then transferred to our unit for inhaled nitric oxide therapy, but did not improve. At 8 days of age he had a continuous murmur over the right lower chest. Colour Doppler echocardiography showed enlargement of left atrium, and a greatly increased venous return from the right lung. Transthoracic echocardiography was no detectable tricuspid regurgitation. Pulmonary arterial angiography showed a large pulmonary arteriovenous malformation (PAVM) involving the right middle and lower pulmonary lobes (figure). At surgery, the right middle and lower lobes were extensively infarcted, and were resected. The child remains well at follow up nine months later. The case underlines the importance of obtaining detailed and repeated colour Doppler echocardiographic assessments before considering ECMO for such neonates.

PAVMs are congenital, but they rarely present in a neonate. Typically multiple, there have been reports of single lesions.1-3 A well, term neonate who fails the hyperoxia test and has a structurally normal heart without evidence of persistent pulmonary hypertension should be investigated further for PAVM. Doppler echocardiography may occasionally help but angiography is required to confirm and demonstrate the lesion.

Transcatheter coil embolisation has been used as primary treatment,1 but surgical resection may be necessary in infants with large defects.

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Right pulmonary arteriogram (RPA) showing the AV fistula (arrow); LA = left atrium.

BOOK REVIEW


During this past decade medical ethics has become a major growth industry. Departments of medical ethics have blossomed in many of the major universities which have medical and/or legal departments and in some universities which have neither. Many universities involve religious leaders from one or more faiths to provide a viewpoint which is guided by the ethics of the founders of these various religions.

Although neonatology must be judged one of the outstanding success stories of medicine during this past decade, it has proved to be one of the more ethically troublesome areas of medicine. The value judgments of perinatologists have been subject to challenge not least by the perinatologists themselves. As John Lantos says in the foreword to this challenging and thought-provoking treatise: ‘physicians, parents, judges, insurance company executives, politicians, journalists, philosophers and theologians have had to re-examine fundamental questions about the meaning of human community. In many contexts, and in many ways, they question whether neonatology is a desirable success or a misguided effort.’

In addition to this foreword, there is also a preface by George Cattermole and John Goheen, and an introduction by David K Stevenson and Emilie W D Young, which together give five of the contributors to the book a chance to set the scene and what the appetite for the remainder of the book. The ‘meat’ of the book is a series of 14 topics each of which is debated by two people. Topics include mater- nal-fetal conflicts, futile treatment, quality of life, epidemiological data and decision-making, withholding and withdrawing treatment and actively hastening death. They urge readers of the book not to bypass these three introductory contributions as they set the scene and whet the appetite for the remainder of the book. The ‘meat’ of the book is a series of 14 topics each of which is debated by two people. Topics include mater- nal-fetal conflicts, futile treatment, quality of life, epidemiological data and decision-making, withholding and withdrawing treatment and actively hastening death. They urge readers of the book not to bypass these three introductory contributions as they set the scene and whet the appetite for the remainder of the book. The ‘meat’ of the book is a series of 14 topics each of which is debated by two people. Topics include mater- nal-fetal conflicts, futile treatment, quality of life, epidemiological data and decision-making, withholding and withdrawing treatment and actively hastening death. They urge readers of the book not to bypass these three introductory contributions as they set the scene and whet the appetite for the remainder of the book. The ‘meat’ of the book is a series of 14 topics each of which is debated by two people. Topics include mater- nal-fetal conflicts, futile treatment, quality of life, epidemiological data and decision-making, withholding and withdrawing treatment and actively hastening death. They urge readers of the book not to bypass these three introductory contributions as they set the scene and whet the appetite for the remainder of the book. The ‘meat’ of the book is a series of 14 topics each of which is debated by two people. Topics include mater- nal-fetal conflicts, futile treatment, quality of life, epidemiological data and decision-making, withholding and withdrawing treatment and actively hastening death. They urge readers of the book not to bypass these three introductory contributions as they set the scene and whet the appetite for the remainder of the book. The ‘meat’ of the book is a series of 14 topics each of which is debated by two people. Topics include mater- nal-fetal conflicts, futile treatment, quality of life, epidemiological data and decision-making, withholding and withdrawing treatment and actively hastening death. They urge readers of the book not to bypass these three introductory contributions as they set the scene and whet the appetite for the remainder of the book. The ‘meat’ of the book is a series of 14 topics each of which is debated by two people. Topics include mater- nal-fetal conflicts, futile treatment, quality of life, epidemiological data and decision-making, withholding and withdrawing treatment and actively hastening death. They urge readers of the book not to bypass these three introductory contributions as they set the scene and whet the appetite for the remainder of the book.