

Extreme prematurity

Extreme Prematurity (EP) doesn't have a universally accepted definition but it is a commonly used term. It refers to infants born at least before 28 weeks gestation. Only 30 years ago, 28 weeks was considered to be the age of viability but slowly that has moved back to 22 or 23 weeks and the intervening gestations are variably extreme. If one really wants to refer to extremely extreme prematurity then 'infants of borderline viability' is the usual term to use.

What should our attitude be to these babies? Attitudes have been surveyed and it is clear that there are big differences between professions. As a group, neonatologists tend to be more optimistic about outcome than obstetricians; and midwives and nurses are on the pessimistic end of the spectrum. Fortunately, as far as survival is concerned, there are good figures available for Australasia generated by the Australian and New Zealand Neonatal Network – at least as far as survival of babies admitted to neonatal nurseries are concerned. Local survival rates should be available in the antenatal ward so we can at least earth ourselves with these facts.

Long-term morbidity is not so easy to pin down. Advances in care might mean that previously poor results no longer apply. On the other hand, longer-term results are what we all want to know about because the speed of development during early childhood pales into insignificance compared to the question of long-term disabilities. Some things are clear. Blindness is blindness and will stay that way. But even cerebral palsy that is diagnosed at one year can be gone at five, and in the other direction, neuropsychological problems sometimes first become apparent during the school years.

In the approach to the extremely premature infant, geographic differences are startling. In the third world, money is far better spent on immunisation or on basic obstetric care rather than on EP. But even in the so-called developed world, there are marked differences in NICU admission practices.

There are differences both within and between countries. In the Netherlands, there are clear-cut guidelines, which discourage (but do not prohibit) provision of intensive care to babies that are less than 26 weeks gestation. This is not surprising given the official support which the Dutch Paediatric Society gives to the Groningen Protocols regarding euthanasia in childhood. On the other side of the coin are the Baby Doe rules in the United States, which are interpreted by some as mandating that all premature infants should receive intensive care. In between are countries like Australia and New Zealand, where there are no national rules and decisions are between the clinical staff and the families. This does result in some small variations between units but it does not seem to cause major problems.

A recent ethical review of this field by a French group¹ comes up with some interesting insights. They point out the hazards of setting a gestational age limit as an absolute rule regarding resuscitation in extreme prematurity. They say that 'in the large cohort of infants studied in the NICHHD Neonatal Network, the survival rate at 23 weeks gestation ranges from approximately 20 per cent for a male infant weighing 520g, to 60 per cent for a female infant weighing 740g'. Prognosis in perinatology is usually affected by multiple factors and in working out the advisability of submitting an extremely premature infant to intensive care, everything should be taken into account. Therefore national rules specifying gestational age limits should be avoided – or if that is not possible, they should be worded in such a way

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that various positive or negative prognostic factors can be taken into account.

The same French group also point out a problem which could arise from setting a lower gestational age limit for the provision of care in extreme prematurity. If provision of intensive care is prohibited on the basis of only age at one extreme of life, the same might be expected to happen at the other. Most of us would not wish to have intensive care thrust on us in our old age but at least we should have a choice, in discussion with our physician, and we shouldn't be excluded from intensive care merely because we are over 90 or any other arbitrary age. The same right to choose intensive care (via the parents) should be accorded to the extremely premature infant. The exceptions are that when parents or other guardians are making decisions for a newborn, physicians have the right – and duty – to refuse to give intensive care when it would be futile and to insist on intensive care when it is manifestly warranted.

In addition to the ethical variability, there are equally marked geographic differences in the outcome of extreme prematurity and advances are still being made. Markestad et al² last year reported the outcome of extreme prematurity in Norway, where there is a proactive approach to the resuscitation and initial intensive care of these infants. More than half of infants born at 23 weeks were admitted to NICU and 39 per cent of them survived – rising to 60 per cent at 24 weeks and 80 per cent at 25 weeks. They point out that apart from Retinopathy of Prematurity, discharge morbidity did not relate to gestation between 23 and 27 weeks.

The perinatal field is one where teamwork is vital. Communication between neonatologists and obstetricians and midwives must be fostered. *Detailed, frequent, frank and open* are the watchwords. The devil is in the detail so the detail has to be communicated. This kind of teamwork is rewarding and it is also helpful when the obstetrician keeps an interest in the baby's progress.

The parents should have the opportunity for a frank, open prenatal consultation. The possibility, even likelihood, of death, blindness, deafness, cerebral palsy and other complications need to be conveyed realistically, with compassion but also with the clear message that there is a competent team to minimise the risk and help everyone through the process. It must also be appreciated that the limits of parental discretion are important and if one is not careful, parents can get the wrong idea of these limits: the lines of communication must be kept open.

Delivery options will depend on the presenting problems and other details but it is noteworthy that about half of extremely preterm babies are born by caesarian section these days. There are various reports suggesting that the outcome is better for extremely preterm (EP) babies born by caesarian and others that show no difference. Naturally, none of them are randomised trials so there is no consensus about the preferred mode of delivery in spontaneous EP except where there is malpresentation, including breech presentation.

If there is time to give steroids – preferably betamethasone – to the mother before an expected EP delivery then this will likely improve the outcome. Some complain that there is little specific information by way of randomised controlled trials at these extremely preterm gestations, however, the evidence that exists³ suggests a large benefit. Doubt has been raised about the wisdom of repeated courses of steroids when delivery does not occur following an initial steroid course. Several large multinational clinical trials are assessing this issue and the results of these trials should be available soon.

Are there any new, promising practices in the delivery room to improve outcome for extremely premature infants? Possibly. Giving a cord blood transfusion by briefly delaying cord clamping and stripping blood from cord to baby is gaining in respectability. Prevention of heat loss by placing the infant in a polyethylene bag is also becoming widely accepted.

The neonatologist is now also very keen to avoid volutrauma in the delivery room by limiting the lung distending pressure during positive pressure ventilation. And should we be using 100 per cent oxygen still? At least we should be able to measure the oxygen saturation at an early stage in the delivery room and should correct the FiO₂ before too much time has gone by. Should it be prophylactic surfactant or just early CPAP? We all have our opinions but a definitive answer will only come from a RCT.

Research using Randomised Clinical Trials has fostered the tremendous progress that has been made in the care of the EP infant over the past 30 years. International perinatal trials are widely accepted and supported by both professionals and parents. It isn't easy to approach a patient about research during the dramatic

events that surround an extremely premature birth but it is possible, and the population now seems to understand the benefits that medical research has already brought to this field and the need for more research. Who knows what another 30 years will bring?

References

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The results of the workforce surveys will be discussed at the July Council and published in the *O&G* magazine.

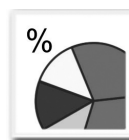
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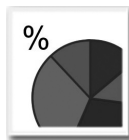
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