

PERINATAL BRAIN DAMAGE

NEW RESULTS, NEW AIMS, NEW MEANS

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For a period of about ten years, between 1958 to 1968 it seemed that the sub-speciality of neonatology was going to become the major concern of paediatricians. Up to eighty per cent of articles in paediatric journals dealt with neonates and their problems, and symposia on neonatology were held one after the other.

The interest aroused in neonatology in the 1960's has persisted. It is manifest in the numerous monographs on neonatal physiology, pathology and the care and treatment of well and sick babies. Knowledge is being consolidated and what were once regarded as ambitious and advanced procedures are becoming standard practice. Advances in the standard of care have saved the lives of many newborns and also, in contrast to what was feared, the survivors are healthier and lead better lives. That this is the case is apparent from recent reports from various centres, the Goteborg study giving perhaps the most convincing evidence for it. Therefore, we asked Professor *Bengt Hagberg* to review the changes which have occurred in the mortality and morbidity of children as a result of improvements in the neonatal care in this journal.

All follow-up studies in the field of neonatology present one problem which perhaps should not be over-emphasised, but is important from the point of view of research. This is that so many changes are made so frequently in some nurseries, that even a carefully planned and executed study may fail to identify the factors which have led to a lowering of neonatal mortality or morbidity. Paediatricians realise that in optimal pre and perinatal conditions severe cerebral damage in the newborn has become a rare disorder, and that even small pre-term babies survive unscathed, but it is more difficult to identify and evaluate the causal factors leading to the improvement in mortality and morbidity. It is clear that some of the improvement is due to the realisation that there must be an optimal supply of oxygen and calories in the pre, intra and post-natal periods, that body temperature, blood pressure and bilirubin levels must be controlled precisely, and that infections must be treated promptly and efficiently with drugs which are not unnecessarily toxic to the newborn. On the other hand, the contribution that physical therapy can make to the well being of a baby once damaged is questionable.

As the number of infants who are severely handicapped as a result of hypoxia or birth trauma decreases and regimes of nursery care become established and stabilised, it should be possible to evaluate the effects of environmental influences in the nursery on neuronal synaptisation, particularly in very immature brains. If animal experiments are relevant, it seems that unusual postures, handling, the amount of exposure to noise and light are almost bound to influence the developing cor-

tical structure of a twenty eight week old preterm infant. We do not know which factors are beneficial and which are harmful to the human neonate. Well planned prospective studies in the future will hardly deal with spasticity, rigidity, athetosis, epilepsy and mental retardation. They will be more concerned with trying to understand what factors in the neonatal period influence later social behaviour as well as intellectual and cognitive capabilities, and how they do so.