Review Article

Iatrogenic Disease in the Newborn

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Summary. The role of intrapartum asphyxia and cerebral birth trauma as an important cause of perinatal mortality is well known and its contribution to perinatal morbidity as a cause of cerebral palsy is widely appreciated. This has led to more careful monitoring of pregnancy and labour, although monitoring techniques are not without hazard. The widespread availability of intensive care facilities for the newborn has resulted in the survival of many infants, particularly those of low birth weight, who might previously have died. Efficacious modes of treatment may, unfortunately, bring in their wake serious problems in the form of iatrogenic disease which may cause or contribute to rapid demise or whose effects may not be fully apparent for many years. Antenatal investigations have also become frequently used and have their own hazards.

Key words: Iatrogenic disease – Intensive care – Neonate.

Introduction

It is important that the pathologist play his part in the recognition of and recording of iatrogenic lesions in the newborn, in doing so he makes an important contribution to safe and effective management of the sick neonate. Over the past two decades, practices in neonatal intensive care have undergone considerable modification and revision as a result of the recognition of the potentially damaging side effects of some forms of treatment. The need for more effective, non-invasive monitoring techniques has provided the stimulus for the evaluation and incorporation of recent advances in science and engineering into the nursery and to more critical and continuous appraisal of neonatal management by the clinician. Although this review is largely concerned with iatrogenic disease produced in neonatal intensive care, it also examines abnormalities occurring as a result of new forms of antenatal and obstetric monitoring which may give rise to problems in the

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perinatal period. I shall also review some of the hazards of breech delivery but for accounts of classical cerebral birth injury refer the reader to Fedrick and Butler (1971) and Pape and Wigglesworth (1979).

**Amniocentesis**

Amniocentesis is a method of investigation which has become widely used in recent years, performed for cytogenetic, metabolic and α-feto-protein studies, in the management of pregnancies of Rhésus negative women with antibodies and, near to term, to examine lecithin/sphingomyelin ratios to determine foetal lung maturity. During the second trimester this procedure may be complicated by fetomaternal haemorrhage, retroplacental bleeding or chorioamnionitis provoking abortion (Robinson et al. 1973), although one large study suggests that these problems occur with similar frequency in women not so investigated (NICHD Study Group 1976). Leakage of amniotic fluid may persist for many weeks following amniocentesis and may be followed by the premature onset of labour, perhaps provoked by chorioamnionitis developing some weeks after the procedure. The pregnancy may also proceed towards term and the resulting fetus, subject for many weeks to intrauterine compression from iatrogenic oligohydramnios may have many of the stigmata of the Potter syndrome, including squashed facies and flexion deformities of limbs, despite adequately functioning kidneys. It may succumb to respiratory insufficiency due to pulmonary hypoplasia induced by this oligohydramnios.

Direct injury to the fetus complicating amniocentesis in the second trimester is uncommon but is more frequently seen following intra-uterine transfusion or following amniocentesis closer to term. A variety of injuries have been described including bowel obstruction and fistulae, laceration of organs, cardiac tamponade or pneumothorax, occular injury, injection of radio-opaque dye into the fetus and porencephaly (Creasman et al. 1968; Youroukos et al. 1980).

**Monitoring**

Fetal cardiotocographic monitoring during labour is now used extensively and monitoring frequently done by means of a clip attached to the fetal scalp. These may produce perforation of the periosteum and subperiostial haemorrhage. These injuries are a site of potentially serious neonatal infection, which may be acquired intra partum.

The potential of breech delivery for producing cerebral anoxic damage is well known, however, there are other hazards of this manoeuvre which should be borne in mind. The increasing efforts made to salvage infants born prematurely results in more survivors of breech delivery, which is commoner in the premature. Spinal cord injury may follow breech delivery if the neck is over-extended, either as the result of direct injury to the spinal cord or anoxic damage mediated by injury to the cervical portions of the vertebral arteries (Yates 1959). Occipital osteodiastesis may occur during breech delivery, the lower part of the occipital bone being dislocated inwards, resulting in catastrophic haemorrhage from damage to venous sinuses overlying the suture line (Wigglesworth and Husemeyer 1977). Bruising of skin and