INTRODUCTION

The term birth asphyxia has become widely used to describe a presumed intrapartum hypoxic-ischemic insult. The preferred term is hypoxia-ischemia, which describes a pathophysiological process at tissue level comprising hypoxemia with ischemia and resultant hypercarbia and acidosis ***(Evans and Levene ,2004)*** .

Perinatal asphyxia is an insult to the fetus or newborn due to lack of oxygen (hypoxia) and /or lack of perfusion (ischemia) to various organs. It is associated with tissue acidosis ***(Synder and Cloherty, 2005).***

Hypoxia is defined as diminished oxygen content of blood . Ischemia is characterized by reduced blood perfusion in a particular tissue bed ***(Rivkin and Volpe, 1996)***. The effects of hypoxia and ischemia may not be identical, but they are difficult to separate clinically . Both factors probably contribute to asphyxia injury ***(Shankaran et al., 2005)***.

During hypoxia-ischemia cerebral blood flow is severely reduced. Immediately following resuscitation elevated levels have been documented, probably due to the " washout " of lactic acid and other products of acute hypoxia-ischemia . This may be followed by a further period of marked reduction in cerebral blood flow ,referred to as the " no reflow phenomenon", documented using near-infrared spectroscopy in asphyxiated infants ***(Van Bel et al , 1993).***

It is likely that following a severe hypoxic-ischemic insult there is an early stage of impaired cerebral blood flow which gives way to vasoparalysis with increased blood flow . Several mechanisms may play a role in the development of such cerebrovascular dysfunction ***(Evans and Levene , 2004)***.

Encephalopathy. This is a clinical, not an etiologic, term that describes an altered level of consciousness at the time of examination . It includes such reversible conditions as hypoglycemia and exposure to maternal medications .

Hypoxic-ischemic encephalopathy (HIE). This term describes encephalopathy as defined earlier with objective data to support a hypoxic-ischemic mechanism ***(Nagdyman N., and Volpe 2001)*** .

Despite major advances in neonatal care during last few years, perinatal hypoxic –ischemic cerebral injury remains a major cause of long term neurological sequelae in childhood ***(Volpe, 1995).***

In the "Neo neuro & up score " six areas are assessed : primitive reflexes, French angels, head control, neck and trunk tone ,neurologic irritability /apathy , alertness ,and responsiveness .

This assessment is designed for neurologic evaluation of infants from 38 weeks' gestation to 16 weeks of age. The full score includes 32 items to be assessed . The first four items are questions asked for caretaker about the irritability /apathy of the infant. The last four items are observations by the examiner about alertness of the infant ***(Fletcher,1998)***.

Cranial ultrasound scans are widely used to identify neonates at risk for brain injury and subsequent neuro-developmental defects, most commonly as a consequence of severe intraventricular hemorrhage (IVH) and cystic periventricular leukomalacia (PVL). Because of the sensitivity of ultrasounds to IVH and periventricular abnormalities and the ease with which ultrasounds can be performed at the bedside, surveillance protocols using US have evolved for screening neonates ***(Jeffrey et al., 2000).***