INTRODUCTION

-Hypoxic ischemic encephalopathy:

Definition:

Hypoxic ischemic encephalopathy is a medical condition whereby an inadequate oxygen supply causes damage to the cells of the brain and spinal cord.

The term cerebral hypoxia technically refers to lack of oxygen supply to the cerebral hemispheres however, it is more typically used to refer to a lack of oxygen supply to the entire brain.(**Johnston , and Ishida et al , 2001)** .

-ie ; Perinatal hypoxic stress is a common cause of neonatal morbidity, mortality and neurological disabilities. Of an approximately 130 million births in the world each year, about 4 million will suffer of perinatal asphyxia, almost 1 million of them die and about 1 million will undergo serious sequalae. Although recent advances in neonatal medicine, there is still difficulty in early detection and treatment of hypoxic ischemic encephalopathy **.** ***[Perrone et al 2002]***

Etiology:

A- Fetal hypoxia (placental insufficiency) 90% of the cases:

1-Maternal hypoventilation.

2-Maternal hypotension.

3-Umbilical cord: compression or knotting.

4-Premature separation of the placenta.

5-Placental insufficiency due to toxemia or post maturity.

B- Neonatal hypoxia:

1-Severe anemia, hemolysis or hemorrhage.

2-Shock.

3-CNS depression: Narcosis, injury or anomalies.

4-Pulmonary: RDS or others.

5-Congenital cyanotic heart diseases***(Stoll*** **and Kliegman, 2007**).

Symptoms:

-In mild cases, hypoxia causes only inattentiveness and uncoordinated movement.

-Severe cases result in a state of complete unawareness and unresponsiveness (coma).

-Brain stem reflexes, including response to light and the breathing reflex, stop. Only blood pressure and heart function are maintained. If this persists, brain death is inevitable.

-If the lack of oxygen to the brain is limited to a very brief period of time, coma may be reversible with varying levels of return to function, depending on the extent of injury. Sometimes seizures may occur, which may be continous with no stop between them (status epilepticus). **(Johnston, and Ishida et al , 2001)** .

-It has been found that convulsions are associated with many changes in behavioral, motor and autonomic functions. These changes lead to release of certain neurohormones such as prolactin, cortisol and growth hormone of which prolactin is the most specific ***(Kilic, 1999).***

-Growth Hormone is 191 amino acid poly peptide secreted from somatotrophic cells at anterior pituitary.It has reported that its level alters in many perinatal events including hypoxic ischemic encephalopathy [Kapoor et al 1997]

-There is growing evidence that Growth Hormone might influence the functions of the CNS ,like other neurotrophins***[Shin et al 2004]***

-Serum Growth Hormone levels decreases and Prolactin levels increases in moderate to severe cases of hypoxic ischemic encephalopathy compared with mild cases and control group***[GY Zhang 2006]***

-Prolactin is a poly peptide of 200 amino acids secreted by the Lactotropes of the anterior pituitary gland***[Agustin 1996]***

-Increased prolactin levels have been reported in full term infants with hypoxic ischemic encephalopathy***[Tasker et al 2004]***

-Increased prolactin levels in neonates with seizures***[kilick s-earalp o-traim o 2003]***

-Stress is a major factor that can lead to secretion of prolactin hormone ***(Grattan, 1991).***

-Transient serum prolactin increase occurs soon after generalized and partial seizures and is believed to be due to direct hypothalamic stimulation by the seizures. **(Morales, 1995).**

-The possibility that serum growth hormone and prolactin levels could be used as early markers in HIE is attractive, as it helps early diagnosis, intervention, and eventually decreasing severity and sequalae , especially that EEG recording is not always available, as well as the difficulties of early imaging [as cranial US ,cranial CT and cranial MRI] ; such as difficult transfere and some pathologies need time to appear in imaging .