Serum Growth Hormone and Prolactin Levels in Newborns with Hypoxic Ischemic Encephalopathy

Thesis

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

{فَأَمَّا الزَّبَدُ فَيَذْهَبُ جُفَاءً

وَأَمَّا مَا يَنْفَعُ النَّاسَ

فَيَمْكُثُ فِي الْأَرْضِ كَذَلِكَ

يَضْرِبُ اللَّهُ الْأَمْثَالَ }

صدق الله العظيم

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Mohammed Seif

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Abbreviations

ACTH	Adrenocorticotropic hormone
ADH	Antidiuretic hormone
BGL	Blood glocuse level
CBF	Cerebral blood flow
Ck. BB	Serum Creatine Kinase brain Fraction
CP	Cerebral palsy
CPS	Complex partial seizures
EEG	Electroencephalogram
EGF	Epidermal growth factor
FSH	Follicle-stimulating hormone
GH	Growth hormone
GHR	Growth hormone receptor
GHRH	Growth hormone releasing hormone
GTC	Generalized tonic-clonic seizures
HIE	Hypoxic-ischemic encephalopathy
IGF-١	Insulin like growth factor ١
IGFs	Insulin like growth factors

LH	Luteinizing hormone
MB	Mammillary body
MSH	Melanocyte stimulating hormone
NO	Nitric oxide
NSE	Neuron specific enolase
OC	Optic chiasm
PET	Position emission tomography
PL	Posterior lobe
PRFs	Prolactin releasing factors
PRL	Prolactin
PrRP	Prolactin releasing peptide
PVL	Periventericular leukomalacia
SPECT	Single photon emission computed tomography
TGF	Transforming growth factor
TRH	Thyrotropin-releasing hormone
TSH	Thyroid-stimulating hormone
VIP	Vasoactive intestinal polypeptide

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Aim of The Work

The main objectives of this study are therefore to:

١- Evaluate growth hormone and prolactin levels in newborns subjected to perinatal asphyxia.

٢- Investigate a possible relation between levels of growth hormone and prolactin and severity of hypoxic ischemic encephalopathy.

Hypoxic-Ischemic Encephalopathy (HIE)

Introduction and Definition:

Hypoxic-ischemic encephalopathy (HIE) is defined as; the interruption of supply of vital nutrients to the brain, mainly oxygen and glucose, sufficiently substantial to cause irreversible damage. When the brain is depleted of oxygen, the result is hypoxic encephalopathy while impaired blood flow to the brain results in cerebral ischemia. Blood flow could be interrupted regionally, within a specific vascular distribution as with an embolic event causing a stroke, or globally as with a cardiopulmonary arrest leading to severe hypoxia and generalized ischemia. When there is impairment in the exchange of respiratory gases, oxygen, and carbon dioxide, the result is asphyxia ***(Korthals and Colon, 2005).***

Although the predominant injury affects the brain, almost every organ system in the body is negatively impacted. Cerebral palsy (CP), seizure activity, and varying

degrees of developmental delays are some of the chronic disabilities seen in survivors ***(Verklan, 2009).***

Incidence :

Neonatal encephalopathy due to perinatal hypoxic-ischemic (HI) brain injury is a significant cause of infant mortality and morbidity. In spite of improvements to obstetric and neonatal care, the incidence of (HIE) remains approximately ٢ to ٤ per ١٠٠٠ live-term births ***(Glass and Ferriero, 2007).***

In Egypt, the neonatal mortality rate was reported to be ٢٥ per ١٠٠٠ live births (١٧ early and ٨ late), and ١٨٪ was due to asphyxia ***(Campbell et al., 2004).***

Causes of Hypoxic-Ischemic Encephalopathy:

Hypoxic-ischemic encephalopathy is the result of a deprivation of oxygen and glucose to the neural tissue, which may be the result of either hypoxemia or ischemia. Hypoxemia is a decrease in the amount of oxygen circulating in the blood. Ischemia is a decrease in the flow of blood available to perfuse the brain. Of the two, ischemia is the most problematic because less oxygen and glucose are delivered to the brain ***(Verklan, 2009).***