SUBJECTS AND METHODS

This study was done on 60 full term newborns with hyperbilirubinemia admitted to private NICU during the period from December 2009 to June 2010. Another 30 healthy full term newborns matching in age and sex & gestational age with total serum bilirubin less than 5 mg/dl were used as control group.

Type of the study:-

prospective statistical study.

SUBJECTS were divided to

(A)Patients group:-

- patients admitted to NICU with hyperbilirubinemia , they were 30 males and 30 females .
- Their ages ranged from 3 to 10 days with a mean of 5.8000 days

Inclusion criteria:-

Newborns with TSB ≥17mg/dl at time of admission to hospital.

Exclusion criteria:-

-Infants with perinatal asphyxia.

-Infants with congenital anomalies.

-Infants with neonatal sepsis .

-Infants with history or manifestations of congenital infection.

(B)Control group:-

The contol group included 30 healthy full term newborns , age and sex matched as the patient group & all were not jaundiced .

They were 16 males and 14 females , their age ranged from 3 : 10 days with a mean of 5.7333 days

All the patients were subjected to the following:-

A-Careful history taking:-

Including the following:-

Pre-Natal history:-

Focusing on the following points:

1-Mother's age.

2-Consanguinity between parents.

3-Maternal disease during pregnancy.

4-ABO & Rh group of the mother.

5-History of complicated pregnancy.

6-Family history of jaundice in previous sibling.

Natal history:-

1-Mode of delivery & instrument use.

2-History of premature rupture of membrane (PROM).

3-History of obstructed labor.

4-APGAR score at 1 and 5 minutes.

Post –Natal history:-

1-Time of appearance of jaundice (hours of age).

2 –Type of feeding whether breast feeding ,bottle feeding or both breast and bottle feeding

B-Clinical Examination include:-

1-Vital signs:-For detection of : tachypnea, tachycardia, fever or hypothermia.

2-Color of the skin : jaundice or pallor.

3-Anthropometric measurements.

4-Presence of any other abnormalities as : cardiac murmurs and abnormal breathing sounds.

5-full clinical assessment including: birth weight ,gestational age , age at admission , sex.

C-Investigations:-

1. Total serum bilirubin (TSB) and Direct serum bilirubin (DSB) at admission.
2. Complete blood picture (CBC) with differential and reticulocytes count (retic.count) .
3. Serum C-reactive protein(CRP).
4. Nitric oxide (NO) & malondialdehyde (MDA).
5. Glucose 6 phosphate dehydrogenase (G6PD) & glutathione peroxidase (GPX).

METHODS& PRINCIPLES:

1}N.O:

Using colorimetric method, In acid medium and in the presense of nitrite the formed nitous acid diazotize sulphanilamide and the product is coupled with N-(1-naphthyl) ethylenediamine . The resulting azo dye has a bright reddish – purple color which can be measured at 540nm.

2}MDA:

Using colorimetric method, thiobarbituric acid(TBA) reacts with malondialdehyde (MDA) in acidic medium at temperature of 95 c for 30 minutes to form thiobarbituric acid reactive product .the absorbence of the resultant pink product can be measured at 534 nm.

3}GPx:

Using U.V method, the assay is an indirect measure of the activity of c-GPx Oxidized glutathione (GSSG),produced upon reduction of an organic peroxide by c- GPx , is recycled to its reduced state by the enzyme glutathione reductase (GR):

$$R\text{-}O\text{-}O\text{-}H + 2GSH \xrightarrow{c\text{-}GPx} R\text{-}O\text{-}H + GSSG + H_2O$$

$$GSSG + NADPH + H^+ \xrightarrow{GR} 2GSH + NADP^+$$

4}G6PD:

Using enzymatic UV method, the enzymatic activity of glucose 6 phosphate dehydrogenase (G-6P-DH) used as substrate glucose 6 phoshate (G_6_P) in presence of $NADP^+$ is determined by the measurement of the rate of increased absorbance at 340 nm due to the reduction of $NADP^+$ as indicate the following reaction :

$$G6P + NADP^+ \xrightarrow{G6PDH} \text{gluconate-6-p} + NADPH + H^+$$

STATISTICAL ANALYSIS

1-The arithmetic mean($\bar{X}$):

The sum of all observations divided by the number of observation $(\bar{X}) = \frac{\sum X}{n}$

where ∑= Sum of individual observations.

n= Number of observations.

2-The standard deviation(SD):

As a measure of dispersion of the results around the mean:

3-Correlation (r)

"Ranked sperman correlation test " for the relation between the studied parameters .

4-Students "t" test:

For statistical comparison as regard quantitive normally distributed data.

The results were considered to be :

-statistically significant at P.value <0.05

-Highly significant at P.value <0.01

-Highly significant at P.value <0.001

-Insignificant at P.value >0.05