Summary and Conclusion

Despite improved neonatal care over the past decades, infections remain common and sometimes life threatening in neonates admitted to the neonatal intensive care unit (NICU).

For many years, a search has been ongoing to find predictors of neonatal sepsis that identify effectively patients who are at risk of infection.

NGAL is present in neutrophil precursors at the myelocyte-metamyelocyte stage of maturation and concentrations are elevated in the serum of patients with acute bacterial infections.

The aim of our study was to investigate whether neonatal sepsis was associated with elevation of serum HNL, which would help us in early and accurate diagnosis as well as in early initiation of appropriate therapy.

The study was conducted on 70 neonates diagnosed as having clinical or definitive sepsis (42 full term and 28 preterm) and 10 healthy neonates with no clinical signs or laboratory evidence for sepsis serving as a control group (6 full term and 4 preterm infants).

The patient group compromised 70 newborns; 34 males (48.6%) and 36 females (51.4%), with mean gestational age of (36.89 ± 2.61 weeks), mean birth weight of (2.55 ± 0.44kg), serum NGAL level of (217 ng/mL), 28 neonates (40.0%) were delivered vaginally, and 42 (60.0%) neonates were delivered by caesarian section

The control group compromised 10 healthy newborns; 4 males (40.0%) and 6 females (60.0%), with mean gestational age of (38.0 ± 1.8 weeks), mean birth weight of (2.7 ± 0.38 kg), serum NGAL level of (30

ng/mL), 4 (40.0%) neonates were delivered vaginally, and 6 (60.0%) neonates were delivered by caesarian section.

For all neonates the following were performed: History taking: (to detect risk factors for sepsis), thorough Clinical examination, laboratory Investigations including:

- Complete blood count with differential leucocytic count.
- CRP quantitative assay.
- Blood culture.
- Blood samples were withdrawn from all neonates by venipuncture to determine NGAL serum level by enzyme linked immunosorbent assay (ELISA) in the 1st day of admission.

The results of our study were:

- HNL level was significantly different between different study groups; being highest in septic and least in control group.
- No significant difference between full term and preterm neonates as regards to HNL in different groups.
- Mode of delivery has no affect on HNL in different groups.
- Gender has no influence on HNL levels in all studied groups.
- Neonates with positive culture had significantly higher HNL concentration than those with negative blood culture.
- HNL concentrations were comparable in patients with bacterial or fungal blood culture.
- No significant correlation between HNL and age, gestational age, birth weight, length of NICU stay, onset of sepsis in different study groups.

- No significant correlation between HNL and other laboratory findings in septic neonates except there is negative significant correlation between HNL and platelet count, APGAR 1min and APGAR 5min.

- ROC analysis of data showed that the best cut-off HNL value for early diagnosis of sepsis was ≥ 128.5 ng/ml (sensitivity=100%; specificity=96.7%; area under the curve=0.825), so HNL was significantly good test to diagnose sepsis.