Alpha1-Acid Glycoprotein as a Marker

For The Diagnosis of Early Onset Sepsis in Full Term Neonates

Prepared by: Wael Mohamed Abdelaal

Supervisor:

Prof.Dr. Gamal Samy Aly Professor Of Pediatrics Vice /Rector Of Community & Environment Affairs Ain Shams University

Prof.Dr. Magdy Karam Elden Aly Professor Of Public Health Head Of Medical Studies Department Institute Of Postgraduate Childhood Studies Ain Shams University

Prof.Dr. Eman Abdelmoniem Algohary Professor Of Clinical Pathology Faculty Of Medicine Ain Shams University

Dr. Ibrahim Saad Abu Saif Assistant Professor Of Pediatrics Faculty Of Medicine Ain Shams University

Introduction:

Neonatal sepsis is any infection involving an infant during the first 28 days of life. Neonatal sepsis is also known as "sepsis neonatorum". The infection may involve the infant globally or may be limited to just one organ (such as the lungs with pneumonia). It may be acquired prior to birth (intrauterine sepsis) or after birth (extrauterine sepsis). Viral (such as herpes, rubella, bacterial (such as group B strep) and more rarely fungal (such as Candida) causes may be implicated.

In the developing world, the neonatal septicemia remains as the major cause of mortality and morbidity in spite of recent advances in the technology and therapeutics, during the neonatal period It is estimated that (up to 20% of all live births) develop an infection easily, because their immune system are not adequately developed, approximately 4 million deaths occur annually, attributable mostly to infection, birth asphyxia, and consequences of premature birth and low birth weight.

The clinical signs of neonatal sepsis are nonspecific and associated with other neonatal diseases, such as (RDS), metabolic disorders, intracranial hemorrhage, and a traumatic delivery; it includes respiratory, Cardiac, Metabolic, Neurological, GIT and general signs.

Isolation of bacteria from a central body fluid (Blood, CSF, and urine cultures) is the standard and most specific method used to diagnose neonatal sepsis. Also there are some hematological signs can be used for diagnosis of neonatal sepsis such as thrombocytopenia, neutropenia or an elevated immature-to-total (I/T) ratio, which is the most sensitive hematological sign.

This study carried out to:

1. Assess the role of α1 -acid glycoprotein as a marker in the diagnosis of neonatal sepsis in full term neonates.
2. Compare α1 -acid glycoprotein level upon diagnostic suspicion and 48 hours later in suspected sepsis.
3. Estimate the correlation between α1 -acid glycoprotein level and mortality in neonatal sepsis.
4. Assess the role of CRP by the new highly specific method (HSCRP) as a marker for the diagnosis of neonatal sepsis.

Our prospective case control study had been

carried out in neonatal intensive care unit, faculty of medicine, Ain shams university. It was conducted on 45 patients have history of risk factors and clinical picture of sepsis either with or without positive blood culture and 30 healthy served as controls

We classify our patients into:

- Confirmed sepsis: 30 cases (Newborns presenting a clinical picture and a positive blood culture).
- Suspected sepsis: 15 cases (Newborns with clinical features and abnormalities of nonspecific laboratory markers).

Control group: 30 cases (healthy newborns).

All of our cases subjected to careful history taking (personal, antenatal, natal and postnatal) to catch up any risk factor for neonatal sepsis either fetal, maternal or delivery.

Full clinical examination to all cases was followed for early detection of neonatal sepsis including cardiac, respiratory, neurological, GIT, and general or systemic manifestations that suspect sepsis.

Also laboratory investigations including CBC (total leucocytic counts, neutrophil counts, immature/total ratio, and platelets counts), blood culture, CRP and a1 acid glycoprotein was done for either confirmed or suspected cases.

Results:

The results of the study were:

1. There were no significant differences between the studied groups regarding gestational age, sex, birth weight, Apgar score, PROM, maternal fever, MSAF, primigravida vs. multigravida, maternal preeclampsia or maternal APH, mode of delivery (CS vs. ND), twin pregnancy, maternal gestational DM, ETT, chorioamnionitis, obstructed labor, circulage, maternal age, socioeconomic level, recurrent abortion or prenatal care.
2. The most frequent symptoms and signs considered in sepsis was temperature instability, followed by poor feeding followed by signs of respiratory distress.
3. The results of clinical picture in our study showed non-significant differences between both groups of confirmed and suspected sepsis regarding either the neurological signs (convulsion, lethargy, hypotonia and bulging anterior fontanel), respiratory (apnea, cyanosis or grunting), cardiac (bradycardia, tachycardia, delayed capillary refill >3 second or shock), gastrointestinal manifestation (jaundice, vomiting or abdominal distension) or skin presentation (mottling, petechiae or sclerema).
4. The laboratory data for the patients' showed that WBC, total neutrophil, band/total neutrophil band/mature neutrophil counts and Hb level were no significantly difference between the two groups.
5. Regarding serum electrolytes abnormalities including hypocalcaemia, hypo or hypernatremia, hypo or hyperkalemia, there were no significant differences between both confirmed and suspected groups.
6. The most frequently cultured organism was E coli (7 cases) followed by both klebsella and staph aureus each one (6 cases).
7. The CRP mean value for the confirmed group was 40.320 and that for the suspected group was 18.226 means that there is a significant difference between both groups.
8. CRP was correlated to the mortality and other parameters including alfa1 acid glycoprotein, gestational age, birth weight, Apgar score at 1 minute and at 5 minutes and the results showed that there was no correlation to any of these parameters; it was positively correlated to mortality only in suspected sepsis.