THE USE OF CRP IN EARLY ONSET NEONATAL SEPSIS: EXPERIENCE OF A LEVEL 3 NICU IN UK

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Background

The incidence of early onset neonatal sepsis is 0.9/1000 live births. Higher incidence is noted in those born <34 weeks and/or <1.5kg and it’s an important cause of morbidity and mortality.

Introduction of National institute of Health and Clinical Excellent (NICE) guidelines in UK (2012) led to increase in babies being commenced on antibiotics, receiving antibiotics for a longer duration and more undergoing Lumbar punctures (LPs).

Meningitis is very uncommon in asymptomatic babies with only perinatal risk factors for sepsis. Our unit uses first CRP≥20mg/l or second CRP≥50mg/l as guide for LP.

In cases of strong clinical suspicion of infection/ clinical symptoms or signs suggestive of meningitis an LP is performed initially.

Aims

To audit and review all cases of neonates treated with antibiotics on our unit and to check if our increased CRP thresholds for LP leads to missed cases of early onset meningitis and hence presentation to hospital with partially treated meningitis..

With antibiotic stewardship in mind we aim to start antibiotics in only those with clinical infection. With plan to review the clinical diagnosis and continuing need for antibiotics.

Early Onset sepsis- Risk Factors

Risk Factors	Tick	Clinical Signs	Tick
Invasive GBS in previous baby		Altered behaviour or responsiveness	
Maternal GBS colonisation, bacteraemia or infection in current pregnancy		Altered muscle tone (e.g. floppiness)	
Rupture of membranes in a preterm infant of any duration prior to the onset of active labour or Rupture of membranes in a term infant more than 24 hours prior to the onset of active labour		Feeding difficulties	
Preterm birth following spontaneous labour (before 37 weeks gestation)		Feeding intolerance (e.g. vomiting, abdominal distension)	
Suspected or confirmed rupture of membranes more than 18hours in pre-term birth		Signs of respiratory distress	
Intrapartum fever higher than 38°C or confirmed or suspected Chorioamnionitis		Respiratory distress starting more than 4 hours after birth	
Parenteral antibiotic treatment given to the woman for confirmed or suspected invasive bacterial infection (such as septicæmia) at any time during labour, or in the 24 hour periods before and after the birth (This does not refer to intrapartum antibiotic prophylaxis)		Hypoxia	
Suspected or confirmed infection in another baby in the case of a multiple pregnancy		Jaundice within 24 hours after birth	
		Apnoea	
		Signs of neonatal encephalopathy	
		Seizures	
		Need for CPAP	
		Need for mechanical ventilation in a preterm baby	
		Need for mechanical ventilation in a term baby	
		Persistent fetal circulation	
		Temperature instability (less than 36°C or more than 38°C) not environmental	
		Signs of shock	
		Abnormal coagulation or thrombocytopenia	
		Xiguna persisting beyond 24 hours after birth	
		Hypoglycaemia or hyperglycaemia	
		Metabolic acidosis (p-10mmol/L)

Material & Methods

Data was collected January-March 2017 for all neonates who were started on antibiotics having met at 2 least amber or 1 red flags as per NICE.

Results

There were 169 such episodes, 77 female and 92 male neonates. Gestation varied between 25+6-40+weeks and 129/169 were term.

Major Indication for septic screen were for maternal temperature and antibiotics in 66/169 and 38/169 were for symptomatic neonates. Other risk factors contributed to the remaining.

Only 1 positive blood culture (GBS) was seen in a symptomatic term neonate with normal CRPs and he made a good recovery.

23/169 (13.6%) neonates met our criteria for LP, 3/23 (8.7%) had a borderline high white cell count but were treated for meningitis. 1/3 (33%) had a positive blood culture and required 14days antibiotics. 108/169(64%) had antibiotics for 2-3days, 51/169 (30%) for 4-7days and rest >7days. There were 15/169 (8.8%) readmissions to Hospital, 9/15 (60%) within 28days of which 6/9 (66%) showed normal CRP’s.

Discussion

Although the criteria for performing an LP differs from that of NICE, we have shown that there were no confirmed cases of early onset neonatal meningitis in this study and no cases of partially treated meningitis which we may have missed. We therefore propose that an arbitrary cut off value for CRP should not strongly influence the decision to perform an LP and instead we should rely on a combination of factors particularly the presence of symptoms.