Plasma levels of TOS, TAS and OSI were significantly higher in patients with neonatal sepsis before therapy as compared to the control group (p<0.000, p<0.000 and p<0.000, respectively) and plasma PON-1 level was significantly lower (p<0.000). TAS levels in after treatment were significantly higher than in the control group (p = 0.009), while TOS, OSI and PON-1 levels were similar in after treatment compared to control group (p = 0.0.078, p=0.597, p=0.086, respectively).

1183 COMPARISON OF URINARY NEUTROPHIL GELATINASE-ASSOCIATED LIPOCALIN, C-REACTIVE PROTEIN AND PROCALCITONIN IN DIAGNOSIS OF LATE ONSET SEPSIS IN PRETERM NEWBORNS

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Objective Urinary neutrophil gelatinase-associated lipocalin (uNGAL) has been suggested as a useful marker in limited recent studies for diagnosis of sepsis in pediatric and adult patients. We aimed to determine the value of uNGAL levels in early diagnosis of late-onset sepsis in preterms, and to compare CRP and PCT.

Materials and Methods Between February - May 2011, preterm infants admitted to NICU between the ages of 7 to 28 days divided into two groups: 24 cases with clinical sepsis (gestational age 32.88±1.45w) and 20 cases as control group (gestational age 33±1.49w).

Results There is no difference in two groups in terms of demographic features of babies. At 1. and 7. days of treatment in sepsis group, CRP (median:25.09mg/Lvs8.63mg/L),

PCT (median; 17.11ng/mlvs1.39ng/ml)and uNGAL levels were found 45.69±18.37ng/ml, 7.89±4.19ng/ml respectively. In control group, uNGAL levels were found 5.78±1.6ng/ml. We found significant differences CRP, PCT and uNGAL levels between groups. On the seventh day of treatment, CRP, PCT and uNGAL levels significantly decreased.

We found that the sensitivity, specificity, positive and negative predictive values, respectively: for CRP; 58.3%, 80%, 77.8% and 61.5%, for PCT; 91.7%, 75%, 81.5% and 88.2%, for uNGAL; 91.7%, 100%, 100% and 90.9%.

Conclusion Urinary NGAL seems to be more sensitive and spesific, reliable biomarker than serum CRP and PCT. We believe that uNGAL unlike other biomarkers that does not require a blood sample, non-invasive and non-sterile conditions, with small amounts of urine collection in newborn sepsis might be an ideal biomarker.

1184 PRO-ADRENOMEDULLIN AS A PROGNOSTIC MARKER IN NEONATAL SEPSIS

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Background and Aims The aim of this study was to investigate the value of pro-adrenomedullin (pro-ADM), as a marker of neonatal sepsis while comparing it with conventional markers of infection in newborns.

Methods Subjects were stratified into three groups; proven sepsis (Group 1a) and clinical sepsis (Group 1b) and the control group (Group 2) consisted of gestational age and birth weight matched newborns. Sequential measurements of white blood cell (WBC) count, C-reactive protein (CRP), interleukin-6 (IL-6) and pro-ADM were compared between groups.

Results A total of 76 patients with neonatal sepsis (31 with proven sepsis and 45 with clinical sepsis) and 52 healthy controls were enrolled. Mean baseline serum levels of CRP, IL-6 and pro-ADM were significantly higher in both Group 1a and Group 1b compared to healthy controls (p<0.001 for both). Although mean baseline CRP and IL-6 levels were similar between groups, mean baseline pro-ADM level was higher in the proven sepsis group than the clinical sepsis group (p<0.001).

Conclusion This is the first clinical study to investigate the value of pro-ADM for the diagnosis of proven and clinical sepsis in a newborn cohort including preterm newborns. Use of pro-ADM in combination with other acute phase reactants such as CRP and IL-6 for the diagnosis and follow-up of patients with neonatal sepsis has high sensitivity and specificity.

1185 NEUTROPHILE VOLUME, CONDUCTIVITY AND SCATTER PARAMETERS AND BETTER RESULTS WITH EMMA STATISTICAL PROGRAMME IN NEONATAL SEPSIS

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Introduction Current hematology analysers can determine cell volume(V), conductivity for internal composition of cell(C) and light scatter for cytoplasmic granularity and nuclear structure(S) and standart deviations.

Method We investigated these parameters in secreening of neonatal sepsis beyond the first day of life. We used LH780 hematological analyzer(Beckman Coulter, Fullerton, CA). We combined these parameters with interleukin-6(IL-6) and C-reactive protein(CRP), and developed models to diagnose sepsis by Effective Modelling of Moleculer Activity(EMMA).

Results A total of 237 newborn, 61 proven sepsis, 108 clinical sepsis and 68 control, were enrolled the study. Mean neutrophil volume(MNV) and volume distribution width(VDW) were found to be statistically increased both in proven and clinical sepsis groups. We developed models using MNV, VDV, IL-6 and CRP. These models gave more sensitivity and specificity than usage of MNV, VDW, IL-6 and CRP alone.

Conclusion We suggest to use combination of MNV and VDW with markers such as CRP and IL-6, and use diagnostic models created by using EMMA including these markers.

Model 1: Sepsis= –1.17+0.015*[CRP]+0.009*[MNV].
Model 2: Sepsis= –1.35+0.0136*[CRP]+0.0074*[MNV]+0.0123*[VDW].
Model 3: Sepsis= –0.94+0.0043*[IL6]+0.011*[CRP]+0.0069*[MNV]

Table 2. Test results and models' performance of sepsis group

Parameter	Cut-off	Sens	Spec	95% Confidence Interval
MNV (au)	>157.1	78.64	81.63	0.807 to 0.890
VDW (au)	>37.4	59.71	77.55	0.687 to 0.789
IL6 (pg/mL)	>18	81.76	92.65	0.869 to 0.945
CRP (mg/dL)	>7.5	71.57	98.53	0.852 to 0.928
Model 1	>0.3099	88.73	92.65	0.921 to 0.975
Model 2	>0.3615	87.75	92.65	0.912 to 0.970
Model 3	>0.2429	95.86	91.18	0.950 to 0.992

1186 DOES AVAILABILITY OF INTERLEUKIN-6 RESULTS INFLUENCE CLINICAL DECISION MAKING IN NEONATAL SEPSIS?

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Backround and aims Clinical diagnosis of neonatal sepsis has always been challenging. Recent studies have suggested that

Interleukin-6 assays can be useful in diagnosis of sepsis alongside CRP. This study looks at the influence of IL-6 and CRP results on clinical decision making.

Methods A prospective web-based questionnaire survey of both junior doctors (online survey) and Consultants (focus group) was carried out using 20 hypothetical scenarios of neonatal sepsis along with hypothetical IL-6 and CRP results. The differences in diagnostic certainty of sepsis on the basis of clinical history alone were compared with that of addition of CRP and IL-6 results, within and between both the trainee and expert groups. (Expert group consensus responses were considered as gold-standard).

Results *Experts*: Based on clinical history, CRP and IL-6 results, experts agreed to the possibility of sepsis in only 25% of the clinical situations. Antibiotic usage by experts subsequent to sepsis categorisation was reduced with the availability of CRP results. (55% after IL-6 vs. 30% after CRP results).

Trainees: CRP results were shown to be statistically significant in changing clinician's decisions. Trainees favoured a greater likelihood of sepsis when IL-6 results were available prior to CRP results. Using the focus group consensus as gold standard, IL-6 results were used by trainees for confirming sepsis irrespective of whether they were available prior to or after CRP results.

Conclusion Both point-of-care IL-6 test results and CRP results helped doctors in confirming a diagnosis of sepsis. IL-6 was not useful in ruling out sepsis.

1187 HIGH INTESTINAL MUCOSAL INJURY ASSOCIATING WITH LOW ANTI ENDOTOXINE IMMUNITY IN VERY LOW BIRTH WEIGHT INFANTS

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Background and Aims Premature infants are exposed to numerous perinatal stresses such as hypothermia, hypoxia, hypotension, umbilical vessel catheterization. All of these have been postulated as risk factors for ischemic injury of the neonatal intestine. The intestinal permeability is increased in bacterial translocation which can lead to endotoxemia and multiple organ failure. The aim of this study was to determine anti endotoxine immunity (AEI) in premature infant depend on birth weight.

Methods Premature newborns were divided into two groups. The first group consisted of 61newborns with birth weight more than 1500 gram and 20 infant with birth weight less than 1500 gram were included in second study. In this study urinary intestinal fatty acid bind protein (i-FABP) level was measured as a specific marker for intestinal mucosal damage and serum LBP concentration was detected for estimation of AEI. Both markers were determined by enzyme linked immunsorbent assay.

Results The mean i-FABP concentration in the second group (1.75±0.62 ng/ml) was elevated in 1.4 times compared with the first group (1.23±0.23 ng/ml). Significant high urine i-FABP concentration was observed in died infants of second group (2.39±0.88 ng/ml, $p<0.05$). In contrast the serum LBP level in newborns of second group was lower (23.1±4.5 ng/ml) in 1.4 time compared to newborns of first group (32.1±2.3 ng/ml).

Conclusion Very low birth weight newborns are at increased risk of intestinal mucosal injury and endotoxemia and decreased serum LBP level in these infants should be considered as an unfavorable factor for sepsis.

1188 SERIAL QUANTITATIVE C-REACTIVE PROTEIN (QCRP) CONCENTRATIONS TO DETERMINE APPROPRIATENESS OF ANTIBIOTICS IN NEONATAL SEPSIS: A NESTED CASE CONTROL STUDY

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Background and Aims QCRP being acute phase reactant has predictable pattern of rise and fall following inflammation. Few studies have used QCRP for appropriateness of antibiotic therapy.

To determine the difference in the magnitude of change in QCRP values from baseline to 48 h in subjects with culture positive neonatal sepsis receiving sensitive antibiotics (CPSA) versus those receiving resistant antibiotics (CPRA).

Methods Neonates < twenty-eight days with suspected sepsis and baseline QCRP >10 mg/L were enrolled. Serum samples at 24, 36 and 48 h after initiation of antibiotics were analyzed for QCRP (PETIA: Particle enhanced turbidimetric immunoassay). After collecting blood culture [BD BACTEC ™ Peds Plus/F] report, CPSA and CPRA were cases and sterile cultures were controls. Mann-Whitney U test, linear regression, ROC curve and Youden's index were used to measure appropriateness of antibiotic therapy.

Results In one hundred forty-one sepsis episodes forty-five were CPSA, forty-four were CPRA and fifty two were culture sterile. The difference in QCRP between CPSA and CPRA was significant at all time points ($p<0.001$). The area under ROC curve was highest for ΔCRP_{0-48} [CRP (0 hr)-CRP (48 hr)] and ΔCRP_{24-48} [CRP (24 hr)-CRP (48 hr)] i.e 0.879 (CI: 0.80, 0.95) and 0.89 (CI: 0.81, 0.96) respectively. If ΔCRP_{0-48} was $\geq$ 6.2 mg/L, the infant was likely to be getting sensitive antibiotics (sensitivity 86%, specificity 84%).

Conclusion A decrease in serum QCRP by 6.2 mg/L can be used as a useful indicator of the appropriateness of antibiotics in neonatal sepsis.

1189 MISSED OPPORTUNITIES FOR PREVENTION OF EARLY ONSET GROUP B STREPTOCOCCUS (EOGBS) INFECTION IN NORTHERN IRELAND

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Background and Aims EOGBS infection is associated with high morbidity and mortality. Historically N. Ireland has had a higher incidence than other parts of the UK. The incidence can be reduced by intrapartum antibiotic prophylaxis (IAP). The RCOG (UK) 2003 guideline on prevention of EOGBS disease states that IAP should be considered in the presence of ≥2 risk factors for GBS. We sought to determine (1) the 2008–2010 incidence of EOGBS disease in N Ireland and (2) whether opportunities to give IAP were missed?

Methods Infants with positive blood or CSF cultures for EOGBS during 2008–2010, were identified by laboratory staff. Data was retrieved from maternal and neonatal charts of affected babies.

Results 35 infants had EOGBS infection. This gave an incidence of 0.47/1000 live births. (England & Wales incidence = 0.34/1000 live births). Four infants died; 3 due to EOGBS. Data was missing from 3 mothers. 10/32 mothers had 1 risk factor and 4/10 received IAP. 8/32 mothers had ≥2 risk factors; 4/8 received intrapartum antibiotics but only 1 as per the RCOG (UK) guidelines. One baby from this group died.

Conclusions Our data suggests that EOGBS infection rate remains higher than other parts of the UK. There appear to be significant missed opportunities for IAP. This may pertain to uncertainties in interpreting RCOG EOGBS prevention guidelines.

1190 ACTIVATED PROTEIN C ALTERS NEUTROPHIL REACTIVE OXYGEN INTERMEDIATES IN PRETERM NEONATES

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