

PO-0547 **HIGH EXTRACELLULAR HAEMOGLOBIN AND DEFICIENT HAEMOGLOBIN SCAVENGING – AN UNRECOGNISED CAUSE OF PRO-INFLAMMATION IN VERY PRETERM INFANTS?**

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**Background** Extracellular haemoglobin (Hb) is toxic and causal in pro-inflammation, oxidative stress and subsequent induction of down-stream mechanisms leading to cell death. Very preterm infants have low circulating levels of haptoglobin, the main endogenous scavenger of extra-cellular haemoglobin. Extracellular haemoglobin and its oxidised metabolite, methemoglobin (metHb), may be a principal inducer of pro-inflammation and oxidative stress leading to organ damage in very preterm infants. **Aim** Evaluate the relationship between circulating levels of extracellular haemoglobin metabolites, endogenous haemoglobin-scavengers and markers of pro-inflammation.

**Material/methods** Prospective study of 64 very preterm infants with a mean (SD) gestational age of 26.4 (1.9) weeks and birth weight of 888 (288) g. Concentrations of extracellular Hb and its metabolites (oxyhemoglobin, methemoglobin), haptoglobin, hemopexin, soluble CD163, TNF $\alpha$ , IL-1b, IL-6, IL-10, monocyte chemoattractant protein-1 (MCP-1) and MMP-9 were measured at 24 h of age through an indwelling arterial catheter. Iatrogenic hemolysis was carefully avoided during sampling and subsequent handling.

**Results** Median (range) concentrations of extracellular Hb were 145.4 (0.1–1718) microg/L, oxyHb 14.3 (5.6–156.3) mM, metHb 1.4 (0.1–31.5) mM, haptoglobin 34.4 (0.1–955) microg/L, hemopexin 0.25 (0.01–0.79) microg/L and CD163 0.7 (0.1–1.9) microg/L. There was an inverse correlation between levels of extracellular Hb and haptoglobin, ( $r = -0.69$  ( $p = 0.001$ )) and hemopexin ( $r = -0.64$  ( $p = 0.001$ )). Increased levels of metHb correlated with those of MCP-1 ( $r = 0.35$ ,  $p = 0.01$ ) and of TNF $\alpha$  ( $r = 0.30$ ,  $p = 0.02$ ).

**Conclusion** Very preterm infants had high levels of extracellular Hb metabolites clearly overwhelming the endogenous haptoglobin scavenging system. Levels of the oxidised extracellular Hb metabolite, methemoglobin, correlated with markers of pro-inflammation. Supplementary treatment with a haemoglobin scavenger may be of importance in very preterm infants.

PO-548 **WITHDRAWN**

PO-0549 **ANTIMICROBIAL USE IN NEONATAL UNITS AT KING ABULAZIZ MEDICAL CITY, RIYADH, KSA, PROSPECTIVE OBSERVATIONAL STUDY**

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**Background** Antimicrobial are the most commonly prescribed medications in intensive care units. Antimicrobial therapy can alter the neonatal microbiome, making the infant more

Abstract PO-0549 Table 1

Location	Antimicrobial Use Rate	p-value
NICU	70.2	
ICN	20.1	
Total	47.7	<0.001
<b>Birth weight</b>		
< 1500 g	53.7	
> 1500 g	43.9	
Total	47.7	<0.001

susceptible to opportunistic infections, and increase incidence of antibiotic-resistant organisms.

**Objective** To identify the antimicrobial use and appropriateness in our neonatal units and stratify these according to infants' location and birth weight.

**Design/methods** A single centre prospective observational study in a tertiary care hospital with 40 beds NICU level IIIB and 35 beds level II (ICN).

The patients who received systemic antimicrobial from February to June 2013 were the study subjects. All infants admitted during the same period were the denominator.

The appropriateness of antimicrobial-use was examined by two independent paediatric infectious disease consultants.

**Results** 335 neonates received 506 antimicrobial courses, 1080 prescriptions and 4565 antimicrobial days.

Antimicrobial use rate (Days of Therapy) per 100 patient days was calculated. (Table 1 and Figure 1).

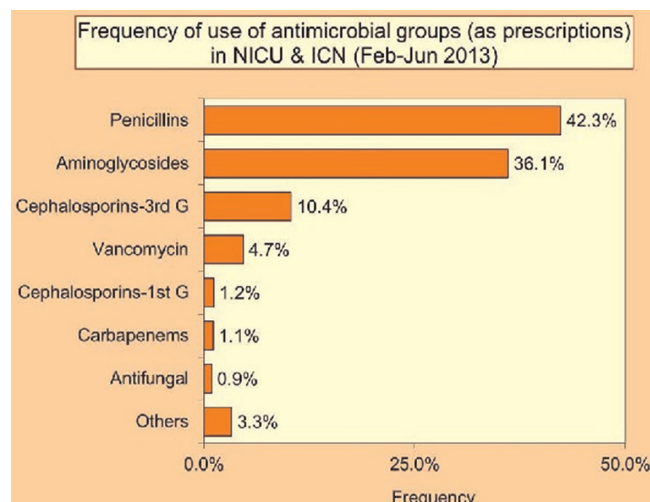
10% of antimicrobial use were inappropriate. (Figure 2 and Table 2).

Vancomycin, 3rd generation cephalosporins and carbapenems were the most inappropriately used (43%, 24% and 18% of cases respectively).

**Conclusion** Our results suggest that interventions to improve antimicrobial prescribing in NICU should be implemented at continuation rather than initiation.

Evidence-based guidelines for perioperative prophylaxis should be strictly applied.

Antimicrobial use in neonatal units are needed to be monitored regularly.



Abstract PO-0549 Figure 1 Inappropriateness of antimicrobial use