PO-0567 WITHDRAWN

PO-0568 TRANSIENT HYPERPHOSPHATEMIA IN INFANTS WITH VIRAL INFECTIONS

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Introduction Transient hyperphosphatemia (TH) is a benign condition, characterised by transient increase of the activity of serum alkaline phosphatase (ALKP). This condition is usually found in children under 5 years of age and elevation of ALKP activity does not last more than 4 months.

Objectives To clarify if there is evidence of bone and liver disease when activity of bone isoenzymes of ALPK is markedly elevated.

Material and methods Herein we present three infants, aged 5, 12 and 18 months. All of them had febrile viral respiratory infection, which required hospitalisation. All of them had increased ALKP 637, >1000, >1000 U/l. Liver enzymes were normal as well as the values of serum calcium and phosphorus. All children have had regular antirachitic prophylaxis. The serum ALKP normalised within 2–3 months. Increased values of ALKP were initially considered as a sign of rickets by the paediatrician who treated infants for respiratory infection and vitamin D therapy was recommended, but was not implemented after reconsideration.

Conclusion Infants with TH can be clearly identified from those having rickets by considering the age of the patient, regular vitamin D prophylaxis, history of viral infection and by excluding other causes of elevated ALKP, particularly liver or bone disease.

PO-0569 PASTEURISATION OF HUMAN BREAST MILK: A NEONATAL DILEMMA

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Background Preterm infants are at risk of postnatal transmission of cytomegalovirus (CMV) via breast milk. Although most infants remain asymptomatic in the neonatal period, doubts about adverse effects on neurodevelopmental outcome have been raised. Pasteurisation prevents transmission of CMV via breast milk, which concomitantly inactivates immune and bioactive components. Data indicate that necrotizing enterocolitis (NEC) and late-onset sepsis (LOS) are less common in preterm infants fed with breast milk, as compared to infants fed with formula or pasteurised breast milk.

Aim To assess whether feeding preterm infants with unpasteurized breast milk i) decreases the rate of LOS and NEC and ii) increases the rate of postnatally acquired CMV infections.

Methods Between January 2008 and July 2013 preterm infants <32 weeks gestational age admitted to the neonatal intensive care unit Innsbruck (n = 341) were eligible for the study. Of those 323 fed with breast milk were retrospectively enrolled in the study. Two groups were formed with 164 infants being fed with unpasteurized and 159 infants with pasteurised breast milk.

Results The number of infants diagnosed with postnatally acquired CMV infections was significantly higher in the non-pasteurised group as compared to the pasteurised group (6.7% vs. 0.6%, p = 0.006). There was no significant difference regarding

rate of LOS (15.9% vs. 15.1%, p = 0.486) or NEC (2.4% vs. 4.4%, p = 0.254).

Conclusion Feeding preterm infants with unpasteurized breast milk increases the rate of CMV infections. Of interest, we also show a non-significant trend to decreased rates of NEC, but this needs to be confirmed in larger studies.

PO-0570 ZYMOSAN BUT NOT LPS, PAM3CSK4, OR FLAGELLIN INDUCES IMMUNE RESPONSES IN MONOCYTES, DCS, AND MONOCYTE-DERIVED DCS OF NEONATES COMPARABLE TO THOSE OF ADULTS

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Increased susceptibility to infection and a tendency toward more severe outcomes than in healthy adults both illustrate the prematurity of neonatal innate immunity mediated via TLRs. However, the details of TLR-mediated neonatal innate immunity are not fully understood. Here, we investigated the differences in TLR-mediated immune responses between the human neonate and adult, focusing on the cytokine profiles of monocytes, dendritic cells (DCs), and monocyte-derived DCs (MoDCs) in cord and adult blood. Purified monocytes, DCs, and MoDCs were stimulated with LPS (TLR4 ligand), Pam3CSK4 (TLR1/2 ligand), flagellin (TLR5 ligand) or zymosan (TLR2 ligand). IL-8, IL-6, and TNF concentrations were analysed in culture supernatants. Compared with the effects in adult blood, LPS-, Pam3CSK4-, and flagellin-stimulated cytokine production in cord blood was weak in monocytes, comparable in DCs, and elevated in MoDCs. In contrast, zymosan stimulation gave comparable cytokine profiles in the monocytes, DCs, and MoDCs of cord and adult blood. The immaturity of TLR-mediated innate immunity in neonates thus depends on monocytes rather than DCs. Zymosan, a cell wall extract from *Saccharomyces cerevisiae*, is known to show vaccine adjuvant activity in adult animal, but the adjuvant activity was unclear in neonatal animal. Our results indicate that zymosan-mediated effective TLR2 signalling in neonates may be useful for developing a neonatal vaccine adjuvant.

PO-0571 PATHOGENS AND EMPIRIC TREATMENT OF SEPSIS IN A NEONATAL INTENSIVE CARE UNIT

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Background and aims Sepsis is a major cause of morbidity and mortality in newborns. We aimed to assess the efficacy of the current empiric regimens commonly used in neonatal intensive care units (NICU) and to describe the characteristics of newborns with sepsis.

Methods Infants admitted to the NICU with a sepsis diagnosis during January 2012 and December 2013 were assessed in a retrospective manner. While infants with early onset neonatal sepsis (EO-NS) diagnosis had received an empiric regimen including ampicillin and gentamicin, those with a late onset neonatal sepsis (LO-NS) diagnosis received carbapenem, vancomycin and fluconazole. Culture antibiogram results were compared with empirical treatment choices. Mortality and recovery rates with empiric

treatment was documented. We used the MedCalc statistical software for statistical analysis.

Results We identified 124 infants (66 males and 58 females). Of these 43 (34.7%) were diagnosed with EO-NS and 81 (65.3%) with LO-NS. While the rate of positive blood culture results was 36% in the EO-NS group it was 84% in the LO-NS group. Treatment success rates were 93.5% in the EO-NS group, and 81.7% in the LO-NS group. Carbapenem resistance was identified in 10.5% of the newborns in the LO-NS group. Mortality rates were 4.6% in the EO-NS and 8.9% in the LO-NS group.

Conclusions The success rates of empiric antibiotic treatment was high in both the EO-NS and LO-NS group. The microbial flora of the NICU should be taken into account when deciding for the empirical antibiotic treatment regimens in infants with hospital acquired sepsis.

PO-0572 UMBILICAL VENOUS CATHETERS WITH AGION ANTIMICROBIAL SYSTEM IN A DUTCH NICU

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Background The majority of preterm infants at NICUs receives a central venous, or umbilical vein catheter (UVC) and is therefore at risk for catheter associated sepsis. Silver-impregnated UVCs with the AgION™ antimicrobial system may prevent sepsis and may have longer insertion time.

Objective To assess sepsis and additional CVC insertion with the use of silver-impregnated UVCs compared with conventional ones.

Methods Catheter-duration, sepsis and additional CVC use was compared between infants with silver-impregnated UVCs (silver-group) during 1 year (2012–2013) and infants with conventional UVCs (controls) during 2011, when inserted >3 days.

Results In 156/249 (2012–2013) infants a silver-impregnated and all 273 with an UVC in 2011 a conventional UVC was inserted. Mean catheter-duration was 5.8 (3–15) days in the silvergroup vs 5.7 (3–12) days in the controls (NS). 11/156 (7%) infants from the silvergroup developed sepsis during catheterisation vs 17/267 (6.4%) controls [NS]. Main causative microorganisms: CoNS (62.5%), *S. aureus* (15.6%), *Enterobacter* (9.3%). In 22/156 infants of the silvergroup, UVC use was longer than 8 days, vs in 20/273 controls (NS). 3/22 of the silvergroup with UVC use > 8 days developed sepsis vs 1/273 controls ($p = 0.015$). Significant more infants in the silvergroup needed additional CVC insertion 18/156 (11.5%) vs in 28/273 (10.3%) controls ($p = 0.00$).

Conclusions Duration of > 8 days of silver-impregnated UVC significantly increased the risk for sepsis as compared with conventional UVC use.

Silver-impregnated UVCs were not inserted for longer periods than conventional UVCs.

Anti-infectious advantage of the silver-impregnated UVCs could not be proven.

PO-0573 A TALE OF TWO CRP'S; IMPLEMENTING THE NICE EARLY ONSET SEPSIS GUIDELINE

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Introduction A rational approach to managing babies at risk of early onset sepsis continues to challenge neonatal units. In August 2012 NICE published guidance on antibiotics for early onset sepsis in neonates (1). We review our unit's performance in implementing the NICE guidance. Baseline assessment using the NICE tool had been completed previously and the NICE guideline implemented with adjustments for local use.

Method A three month prospective audit of babies at risk of or suspected of having early onset sepsis (sepsis within 72 h of birth). The NICE guideline audit tool was used. (3).

Results 64 babies were audited. Every baby had a blood culture taken before commencement of antibiotics and were started on correct antibiotic doses. Initial CRP's were taken in 95% of cases but only 61% had a repeat at 24 h.

69% of babies received antibiotics within 1 h of making clinical decision. 88% had cultures available at 48 h as per local policy.

Discussion Our data demonstrates the challenge of implementing a relatively straight forward protocol of care. We excelled in some elements: initial investigation and prescribing accuracy. There was clear room for improvement in other areas.

Simple changes to practice have subsequently been implemented including revised gentamicin prescription charts and education to highlight the importance of timely administration of antibiotics and the evidence behind checking CRP levels (5, 6, 7). Re-audit is planned for early 2014.

PO-0574 INDICATIONS AND OUTCOMES OF LUMBAR PUNCTURES IN TERM NEONATES IN A TERTIARY NEONATAL UNIT

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Background Lumbar puncture (LP) is usually performed when there is a clinical suspicion of meningitis in babies with suspected sepsis. NICE recently published their guidelines on 'antibiotics for early-onset neonatal infections' with guidance on when LPs should be considered.

Aim To audit the indications and outcomes of LPs performed in term babies (>37 + 0 weeks) in a tertiary neonatal unit.

Methods A list of term babies who had an LP was obtained from the Microbiology Department between 01/01/2010 and 31/12/2013. The Badger electronic patient record and hospital blood results systems were reviewed to collect the data.

Results In the last 4 years we had 2,882 term babies admitted to the neonatal unit. 136 LPs were performed in 133 term babies. The reasons for LPs were; (a) raised CRP in 106 cases (median CRP was 70), (b) abnormal neurology in 18 cases, (c) positive blood culture in 8 cases and (d) 4 were for no other clinical focus. There was one culture of coliforms and another positive for herpes simplex virus type 1 on PCR. At discharge, 8 had a diagnosis of meningitis and 1 with encephalitis.

Conclusion The predominant indication for LPs in term babies was a raised CRP. We only isolated organisms from two samples. As per NICE guidance, we rely on a combination of clinical findings and CRPs when deciding which term babies to LP.

REFERENCES

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