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NEONATAL MORTALITY IN VERY-LOW-BIRTHWEIGHT INFANTS (VLBWI) FROM TWO NEONATAL NETWORKS IN SPAIN AND JAPAN

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Background: VLBWI mortality rates vary across NICUs, however few comparisons are available between different national networks.

Aim: To compare and analyze differences in neonatal mortality rates of two VLBWI cohorts from Neonatal Networks in Spain and Japan.

Methods: Risk/protective factors, complications, and morbi-mortality outcomes were compared among inborn VLBWI admitted to NICU's from SEN-1500 (7,006 infants, 63 NICU's) and NRNJ (8,695 infants, 69 NICU's) from 2005 to 2007. Non-parametric independent comparison analysis and logistic regression models were performed to predict mortality adjusting for perinatal risks factors.

Results: Significant differences were found in gestation [mean(SD); 29.3(2.9) vs. 28.6(3.3) wks] and birthweight [1117(271) vs. 1031(304)g. Both, 28-days neonatal and pre-discharge mortality rates were significantly higher in SEN-1500 (12.5% and 14.7%) than in NRNJ (6.4 and 9.2%). Differences in mortality remained even when adjusting for GA, birthweight, prenatal steroid use, 1 and 5 -min Apgar scores and presence of major congenital anomalies. There were many differences in clinical management among networks. In SEN-1500, use of surfactant and high frequency ventilation and DBP and PDA ligation rates were lower, but had higher rates of NEC, grades₃₋₄ IVH, and specially of sepsis (32.7% vs. 7.3%; $p < 0.001$).

Conclusion: Differences in neonatal and pre-discharge mortality rates of VLBWI from SEN-1500 and NRNJ could not completely be explained by initial risk and protective factors. Sepsis-related mortality accounted for 61.3% of the excess mortality in SEN-1500. The implementation of systematic preventive strategies for sepsis seems mandatory.

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HOW USEFUL ARE BLOOD CULTURES ON PICU?

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Objectives: To determine the current practice of obtaining blood cultures sent from PICU.

Methods: Retrospective study of all blood cultures sent from patients in one calendar month (January 2009).

Results: A total of 140 blood cultures were sent from 34 patients over 89 screening episodes. Only 22% of screening episodes achieved the minimum requirement of cultures of blood, urine and ET aspirates. Neither clinical parameters nor infective indices showed reliable correlation with positive blood cultures. 23 (16%) of blood cultures were positive whilst 9 samples were attributed to probable contaminants. A single patient (with Candidaemia) accounted for 10 positive samples. Blood cultures were obtained from different sites including peripheral (36), arterial (54), central (50). The number of positive cultures were equivalent from each of these sites. Of the patients screened after admission 60 were already receiving IV antibiotics.

Conclusions: Blood cultures were commonly performed and demonstrated a low overall yield perhaps as a result of the criteria used for screening. Several areas of practice warrant improvement including obtaining a complete screen more often and implementing measures to reduce the contamination of peripheral samples (no touch technique). A prospective study would be needed to determine the criteria for screening more accurately. Furthermore, there is a need for more reliable indices of infection which may also reduce the use of antimicrobials.

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MONITORING OF SERUM VANCOMYCIN LEVELS IN ICU PEDIATRIC PATIENTS

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Aims: To analyze the results from the clinical monitoring of serum vancomycin levels among ICU pediatric patients.

Methods: A retrospective drug utilization evaluation was performed for pediatric patients who received intravenous vancomycin from 1 October 2007 to 31 March 2010. Dosing regimen was 40 mg/kg of body weight. All patients who received vancomycin for more than 72 hours had at least once trough serum concentration documented and were included in the study. Trough levels were obtained on steady state, 30 minutes before administration. Vancomycin concentrations were measured by an immunoassay procedure.

Results: A total of 138 samples were collected from 30 patients, aged 3 months to 16 years. Mean trough concentration was 12.9mcg/ml (median: 10.9, range: 0.2 - 46.7). Trough levels were below minimum suggested level of 10mcg/ml in 60 cases (43.5%) and above the upper limit of 15mcg/ml in 42 cases (30.4%). Fourteen of 42 cases (33.3%) with high vancomycin levels were patients with known renal failure and/or under renal replacement, whereas renal failure was documented only in 7 cases (11.9%) with suboptimal levels. Only 26% of serum samples (36 of 138) were in the therapeutic range.

Conclusions: Our data suggest only a fourth of the patients had serum levels in therapeutic range and almost half of this population had serum levels below the normal range. The dosing schedule of 40mg/kg/day in children is unlikely to achieve the recommended pharmacodynamic target. Alternative dosing such as 60mg/kg/day or continuous infusion should be considered in order to optimize the therapeutic effect.

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EVALUATION OF THE PREVALENCE AND RISK FACTORS FOR COLONIZATION BY VANCOMYCIN-RESISTANT ENTEROCOCCUS AMONG PEDIATRIC ICU PATIENTS ON ADMISSION

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Background: Our institution experienced an increase in the frequency of vancomycin-resistant enterococci (VRE) clinical isolates. Surveillance cultures upon hospital admission for patients at high risk is recommended. We sought to measure the prevalence and risk factors of VRE carriage among

medical new patients in a Pediatric Intensive Care Unit in a university Children's Hospital.

Method: We recorded the positive VRE samples from new patients entering the PICU from 10/10/2008 - 15/04/2010. Cases had positive VRE clinical cultures (perianal/stool samples) within 48 hours of hospital admission.

Results: VRE carriage was 9,33% on admission (39 of 418 of new patients). 53,84% of the carriages had a recent previous hospitalization (33,33% of them being oncologic patients). 51,28 % of the cases had previous recorded antibiotic treatment. 46,16 % of the patients had no previous admission (33,33% of them being trauma patients). 3/39 patients developed sepsis with positive blood culture of *E. faecalis* (one), *E. faecium* (two). 3/39 of the carriages had abdominal infection with positive pus cultures of *E. faecium*.

Conclusions: Our study demonstrates that recent previous hospitalization is not a significant predictor for identifying carriers on admission but previous antibiotic treatment and neoplastic disease are. The wide use of antibiotics among paediatric patients may be the answer. Early identification and isolation of VRE carriers among critically ill patients should supplement application of infectious control measures in an attempt to reduce nosocomial spread and burden.

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CLINICAL OUTCOME OF NEONATAL CONS-SEPSIS WITH A VANCOMYCIN-SPARING REGIMEN: FAVOURABLE RESULTS WITH CEFAZOLIN AS FIRST CHOICE AGENT

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Background and aims: The typical empiric antimicrobial treatment protocol for neonatal coagulase-negative staphylococci (CONS) sepsis includes vancomycin. However, the protocol in our NICU prescribes cefazolin to cover CONS. The susceptibility of CONS blood isolates to cefazolin and clinical outcome of infants with CONS sepsis was studied during 2000-2006.