Epidemiology of pediatric sepsis: the Latin American Pediatric Sepsis Study (LAPSES STUDY)
EPIDEMIOLOGY OF PEDIATRIC SEPTIC PATIENTS WITH FEVER-NEUTROPENIA
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Background: Fever-Neutropenia (FN) causes significant morbidity and mortality among cancer patients. Aims: We hypothesize that select serum proteins may generate a distinctive proteomic signature which could be used as biomarker to predict clinical outcome. Methods: High risk FN (HR-FN) patients defined with either clinical outcomes: prolonged hospitalization (>7 days) or clinical sepsis requiring Intensive care unit admission. Low risk FN (LR-FN) patients had none of above. Blood samples were collected upon FN presentation (40 FN events), pooled proteomic data were generated using mass spectroscopy and correlated with clinical outcome. Each candidate protein was compared between the HR-FN and LR-FN patients using exact nonparametric test. To measure false discovery rate, Q-values were calculated based on resulting p-values. Q-values < 0.05 were considered to be statistically significant. Results: Subject's median was age 11 years and malignancies included leukemia (52%), CNS(22%) and bone(17%). Median hospitalization days were 4 (LR-FN) and 11 (HR-FN). We identified a specific proteomic signature in the sera of patients with HR-FN in which median levels of C-reactive protein, beta-2-microglobulin, fibrinogen-like protein 1, intercellular adhesion molecule 1, amyloid A protein and tenasin were significantly elevated as compared to LR-FN patients. In contrast, median serum proteins levels for Protein S100-A9 were significantly higher in the LR-FN group compared to the HR-FN group (p-value 0.019, Q-value 0.055). Conclusions: Serum proteomic analysis upon FN presentation demonstrates unique profile which correlates with clinical outcomes. These profiles may be useful in FN risk stratification that may lead to timely interventions to decrease FN associated morbidity and mortality.

PROTEOMIC BIOMARKERS FOR RISK-STRATIFICATION OF SEPTIC PEDIATRIC PATIENTS WITH FEVER-NEUTROPENIA
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Background: The prevalence of sepsis, severe sepsis and septic shock were 42.6%, 25.9% and 19.8%, respectively. Among the 464 septic children, 53.4% were male and median age was 11.6 months. Fifty percent of the septic patients were <1 year, 43% had at least one chronic underlying condition, and 86.3% had one or more organ dysfunction on admission. Female gender, age <1 year, mother schooling <4 years and immunosuppression were associated with the occurrence of sepsis (p<0.05). Mortality among septic patients was 14.2%. Female gender, immunodeficiencies, hematological diseases, malignancies or any organ dysfunction (p<0.05) were significantly related to mortality. Conclusions: Among our study population, sepsis was frequent and related to high mortality. Further studies are necessary to evaluate the causes of the high prevalence and mortality. Such understanding is essential to implement specific measures to reduce the burden of pediatric sepsis in Latin America.

SLEEP-WAKE CYCLES OF CRITICALLY ILL CHILDREN IN THE PEDIATRIC INTENSIVE CARE UNIT AFTER MAJOR SURGERY: AN ACTIGRAPHIC ANALYSIS
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Background and aims: Children admitted to the PICU after surgery are exposed to a multitude of risk factors for sleep disruption, including pain, noise, light and frequent ICU interventions. This sleep disruption may have a negative effect on recovery. Actigraphy is useful in the evaluation and intervention of sleep patterns in PICU patients. Aims: To use actigraphy to characterize sleep-wake cycles in infants and children. Aims: The overall objective of this study is to characterize the sleep patterns of infants and children in the hospital after major cardiac, orthopedic or urologic surgery using actigraphy. We hypothesized that long-term continuous actigraphy will demonstrate significant disruption of sleep-wake cycles with prolonged recovery to normal sleep-wake cycles. Methods: The study was approved by the Johns Hopkins Institutional Review Board. After discharge from the PICU, the children were observed for 2 weeks. Actigraphy was used to monitor sleep-wake cycles for 24 hours. Results: No differences were found in sleep-wake cycles between the groups. Conclusions: No differences were found in sleep-wake cycles between the groups. Therefore, actigraphy may not be a useful tool to monitor sleep-wake cycles in infants and children.