Predictors of mortality in neutropenic patients with septic shock


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Background: Chemotherapy-induced neutropenia is a risk for serious infection. Septic shock still causes high mortality among cancer patients. We aimed at identifying predictive factors of mortality in neutropenic patients (ANC < 0.5 x 10⁹/L) who developed septic shock.

Methods: All cases of septic shock defined according to the ACCP/SCCM criteria observed in our department (Hematology, Aziza Othmana University Hospital) between 2005 and 2009 were included in this study. All clinical, biological and microbiological data were collected at the onset of septic shock and during outcome. Initial score on the Sequential Organ Failure Assessment (SOFA score) was performed for each patient. Statistical analysis was performed using Pearson test.

Results: Thirty three septic shock were observed in patients with hematological malignancies: Acute leukemia (31), lymphoma (2). Median age was 27 years (range, 3–67). 38% of septic shock were observed during chemotherapy induction phase. Median time for occurrence of septic shock was 15 days from onset of neutropenia (range, 2–32). Microbiological documentation was obtained in 23 cases (69.6%). The bacteria involved were: Klebsiella (9), Pseudomonas (7), Stenotrophomonas (4), E. coli (1), Octrobacter anthropi (1) and Acinetobacter (1). 9 (39.1%) isolates were resistant to broad spectrum antibiotics. 20 patients (60.6%) developed ARDS during the evolution. Initial SOFA score was > 11 (i.e. a risk of mortality of 95%) in only 6 patients (18.1%). Only 8 patients (24.2%) were admitted in ICU with a median time of 1.8 day (range, 1–3 days). Day 30 mortality was 85%. By univariate analysis predictors of mortality were: Disease status (p = 0.009), neutropenia lasting more than 15 days (p = 0.012), fever for more than 3 days in patient on antibiotherapy (p = 0.009), hemoglobin level < 50 g/l (p = 0.038), isolate resistant to piperacillin/tazobactam (p = 0.025), presence of clinical symptoms from more than 1 site (p = 0.008), patients not on imipenem antibiotherapy at the onset of septic shock (p = 0.019), occurrence of ARDS during evolution of septic shock (p = 0.003) and non-admission in ICU (p = 0.043). No independent predictor found in multivariate analysis.

Conclusion: This study revealed that several factors play a significant role in mortality during septic shock. Despite low proportion of patients with baseline high SOFA score, the mortality rate in our study was very high highlighting the need for appropriate management and early admission in ICU to improve outcome.

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Incidence of nosocomial respiratory tract infection in pediatric intensive care unit of University Hospital Center (UHC) of Tirana


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Background: Nosocomial Respiratory Tract Infection (NRTI), have high morbidity, random mortality, increase hospital stay and the patient cost.

Methods: This is a prospective study, including all patients during the period February 2007–January 2008. NRTI was defined according to CDC criteria: - new production of sputum · new pulmonary infiltrates appearing in the chest x-rays associated with respiratory failure. - lab evidence of infection Correlation between extrinsic factors and the appearance of NRTI identified by Kendall’s tau b test for two nonparametric variables turned out to be significant.

Results: The number of NRTI was 15 from 484 patients treated in PICU. 213 patients were exposed to nasogastric tubes, 97 to endotracheal tubes, 39 to antibiostatic usage. Out of 15 patients with NRTI in 13 were used ET, in 6 antibiostatics, in 13 were used nasogastric tubes. Average NRTI appearance day was 5.38. Average stay in hospital for patients without NRTI was 3.6 days. Average stay for patients with NRTI was 18.5 days. Comparison of above mentioned averages revealed to be significant (p < 0.01). Etiological pattern of NRTI was as follow: Pseudomonas aeruginosa 40%, Klebsiella sp 13.3%, Acinetobacter sp 13.3%, others gramnegative 19.9%, gram-positive 13.3%. The antibiogram indicates presence of Pseudomonas aeruginosa resistant to quinolone and aminoglugoside (genticamycine) – in 30%.

Conclusion: Incidence of NRTI was 3%. Multiresistant strains pose major difficulties in managing NI. This study show the correlation between the extrinsic factors and the appearance of NRTI. This research highlights the need to assess the preventive measures and the identification of monitoring actions.

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Clinical characteristics and prognostic factors in patients with Stenotrophomonas maltophilia bacteremia

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Background: Stenotrophomonas maltophilia is a multi-resistant, non-fermentative gramnegative bacillus, which is increasingly being recognized as an important nosocomial pathogen affecting debilitated patients. S. maltophilia infections are associated with high morbidity and mortality. This study aimed to clarify the clinical characteristics, antibiotic susceptibility, antibiotic treatment, outcome, and prognostic factors in patients with S. maltophilia bacteremia.
Methods: A retrospective cohort study was conducted at the University of Tokyo Hospital, comprising 1,150 beds, with specialty services including intensive care and transplantation in Japan, from January 2003 to September 2009.

Results: During this study period, 7,216 positive blood cultures were identified. Of these, 87 (1.2%) blood cultures from 54 patients showed S. maltophilia growth. The mean age of the patients was 53.3 ± 3.0 years. In 52 patients (96%), S. maltophilia bacteremia was hospital-acquired, in particular, in 49 patients (91%) it developed after prolonged hospitalization of >2 weeks. Forty-one patients (76%) had an indwelling central venous catheter (CVC), 30 (93%) had received antibiotic therapy, 48 (89%) had underlying malignancy, 11 (20%) had diabetes mellitus, and 11 (20%) were receiving corticosteroid therapy. In 19% of all the cases of bacteremia, polymicrobial isolates were confirmed. The overall and bacteremia-related mortality rates were 39% and 26%, respectively. The most common sources of bacteremia were CVC (33%) and pneumonia (15%); the source was unknown in 20% cases. Tests for antibiotic susceptibility revealed that the isolates were most sensitive to trimethoprim-sulfamethoxazole (79%). Only 47% and 43% of the isolates were susceptible for ceftazidime and ciprofloxacin, respectively. Univariate analysis revealed that bacteremia originating from the pneumonia, patients treated with inappropriate antibiotics, and patients with a persistent indwelling CVC had a significant higher mortality rate (P < 0.0001, P < 0.0001, P = 0.0027, respectively).

Conclusion: S. maltophilia is an important pathogen, particularly, in immunocompromised hosts. Isolation of this organism from a blood culture should prompt a careful review of the patient, with particular emphasis on removal of an indwelling CVC and commencement of appropriate antibiotic therapy. In this study, we noticed an increasing trend of resistance to ceftazidime, cefepime, and ciprofloxacin. Therefore, we believe that proper usage of antibiotics is important for infection control.

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Prevalence of mecA, aap genes and slime layer formation and its association with antibiotic resistance in isolated Staphylococcus epidermidis of TUMS hospitals health care staffs

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Background: Staphylococcus epidermidis strains are frequently associated with catheter-related infection, acute bacteremia and hospital-acquired infection. Some of the isolates have extracellular matrix called slime. The recent studies show that slime-forming bacteria are more resistant to antibiotics than planktonic bacteria. In S.epidermidis, the accumulation associated protein (aap) is essential to biofilm development and is involved in the accumulation phase of biofilm formation. methicillin resistance is mediated by the mecA gene. However in contrast to MRSA, very little attention is paid to MRSE. The aim of this study was to determine the prevalence of mecA, aap gene and slime production in S.epidermidis isolates and antibiotic resistance in nasopharynx isolates of health care personnel.

Methods: A descriptive cross sectional study was performed on 163 isolates. These were collected from July to December 2008. S. epidermidis isolates tested for slime production onto CRA and antibiotic resistance. The extracted DNA of S. epidermidis isolates were examined by PCR involving specific primers for mecA and aap genes.

Results: Among 163 collected nasal swabs 99 (60.7) were S. epidermidis. Of these 35.3 isolates produced slime. Significant relation between slime production and resistance to Penicillin, oxacillin (p < 0.0001), tetracycline (P = 0.0005), erythromycin (P = 0.001) and clindamycin (0.003) was found. 95.8% and 94.8% isolates were PCR-positive for mecA and aap, respectively.

Conclusion: Surveillance of nasal colonization with slime-forming MRSE in health care workers might provide useful information for the establishment of infection control procedures toward these bacteria.

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