A prospective cohort on nosocomial sepsis with drug resistant gram negative organisms from South India

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**Background:** With the medical advances and the increasing use of invasive procedures and indwelling devices in the hospitalised patients, nosocomial infection has become an important cause of morbidity and mortality in the ICU's. With the aim of studying the clinico-microbiological profile of nosocomial sepsis and its impact on outcome in an Indian tertiary care set up, we undertook this prospective observational cohort study.

**Methods:** Patients admitted in medical ICUs with features of sepsis 48 hours post-admission were included. All patients were followed up till discharge from the hospital or death. The source of infection for development of sepsis was identified whenever possible.

**Results:** Out of 174 patients, 109 (62.6%) were males. Median age was 56yrs. The sources of nosocomial sepsis were pneumonia (44.8%), Urinary tract infections (21.8%), CRBSI (5%), Pneumonia and UTI (4%), and blood stream infection (10.3%). Sepsis of unknown origin was present in 15.5%. The comorbidities present were diabetes mellitus (26.4%), coma (19.5%), aspiration (14.9%), CKD (8.6%), chronic lung disease (13.2%), chronic liver disease (10.3%) and steroid use (8%).

Positive cultures were obtained in 63.8% cases, with more isolation of Gram negative organisms (69%). There were Klebsiella pneumoniae (70%), E.coli(66%), Enterobacter(100%) producing ESBL. 62% of Acinetobacter baumanii and 48% of Pseudomonas aeruginosa were MDR whereas 3% and 15% were PDR respectively. The complications were renal failure (27%), respiratory failure (23%), metabolic acidosis (6.9%), severe sepsis (38%) and septic shock (32.8%)

The recovery was observed in 63%. No difference in mortality was observed between culture negative (38.1%) and positive sepsis (36.9%). Infections due to A.baumanii had the worst prognosis with crude excess mortality of 13% (p = 0.147). UTI had a better prognosis compared to the rest of nosocomial infections. (p = 0.057). The median ICU and hospitalization days were 11(IQR 7, 19) and 19(IQR 11, 28) days respectively.

**Conclusion:** Pneumonia is the leading cause and gram negative bacilli are the commonest etiology resulting in nosocomial sepsis. Nosocomial sepsis is associated with comorbidities, indwelling device usage, and results in significant mortality and morbidity. Education of health care personnel, strict infection control measures and prudent use of antibiotics go a long way in reducing nosocomial infections.