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A descriptive study on infections acquired in an intensive care unit of a secondary healthcare center in Sri Lanka

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Nosocomial infections are a substantial burden, particularly in patients admitted to intensive care units (ICUs). Present study was aimed to find the incidence, risk factors, and associated mortality of ICUAIs. A descriptive cross-sectional study was conducted among patients who were admitted to the ICU of Base Hospital, Wathupitiwala, Sri Lanka for three months from April-2019. A total of 250 patients who were admitted to ICU or readmitted 72 hours after discharge from the ICU were included. Demographic data and risk factors for infections were gathered from bed-head tickets. Microbiological screening samples were cultured to identify infections on admission to ICU. Screening-negative patients underwent repeat sampling for culture and antibiotic sensitivity testing (ABST) on each 3rd day of ICU stay. Of 250 patients, mean age was 57.08±17.65 and (52.8%) were males. Major indications for ICU admission were monitoring (50.4%) and ventilatory support (47.2%). Of the 250 patients, 34 patients (13.6%) were diagnosed with ICUAIs. Of the patients with ICUAIs, 35.29% were in 61-70 years. At least one risk factor was shown by 132 patients (52.8%). Those risk factors were; hypertension (OR=2.09, P= 0.06), bronchial asthma (OR=1.26, P= 0.60), epilepsy (OR= 3.29, P=0.20), ischemic heart disease (OR=1.52, P=0.39), and rheumatoid arthritis (OR=1.06, P=1.0), but they were not significant. Besides, ventilation (OR=4.31, P=0.0007) and continuous positive airway pressure (CPAP) (OR=3.57, P=0.001) were identified as risked procedures for ICUAIs. As per type of ICUAIs, respiratory tract infections (RTIs) were detected in 91.18% (31/34), followed by bloodstream infections (5.88% (2/34)) and urinary tract infections (2.94% (1/34)). Types of pathogens causing ICUAIs were *Acinetobacter* spp.-70.6% (24/34,) followed by *Escherichia coli*-11.8% (4/34), *Pseudomonas* spp.-8.8% (3/34), methicillin-sensitive *Staphylococcus aureus*-5.9% (2/34), and methicillin-resistant *S. aureus*-2.9% (1/34). ABST results of *Acinetobacter* spp. were 100% resistant to ceftazidime (20/20), ciprofloxacin (20/20), levofloxacin (20/20), imipenem (7/7), and 95% resistant to amikacin (19/20), gentamicin (19/20), piperacillin-tazobactam (19/20), sulfamethoxazole-trimethoprim (19/20), and ticarcillin-clavulanic acid (19/20). However, 100% of *Acinetobacter* spp. were sensitive to polymyxin B (20/20). Mortality rate of patients with ICUAIs was 29.4% (10/34) whereas it was 24.07% (52/216) amongst the non-infected patients. In conclusion, the most frequent ICUAI was RTIs which were mainly caused by *Acinetobacter* spp. that was resistant to most of the routine antibiotics. The important risk factors for ICUAIs in the present study were intubation, nebulization, ventilation, and CPAP. Although the mortality rate of ICUAIs was slightly higher, there was no significant increase in the mortality rate due to ICUAIs.

Keywords: ICU-acquired infections, Nosocomial infections, Mortality, Risk factors, *Acinetobacter* spp

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