

Incidence and Risk Factors of Central Venous Associated Infections in a Tunisian Medical Intensive Care Unit

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Abstract : Background: Central venous catheter associated infections (CVC-AI) are among the serious hospital-acquired infections. The aims of this study are to determine the incidence of CVC-AI, and their risk factors among patients followed in a Tunisian medical intensive care unit (ICU). Materials / Methods: A prospective cohort study conducted between September 15th, 2015 and November 15th, 2016 in an 8-bed medical ICU including all patients admitted for more than 48h. CVC-AI were defined according to CDC of ATLANTA criteria. The enrollment was based on clinical and laboratory diagnosis of CVC-AI. For all subjects, age, sex, underlying diseases, SAPS II score, ICU length of stay, exposure to CVC (number of CVC placed, site of insertion and duration catheterization) were recorded. Risk factors were analyzed by conditional stepwise logistic regression. The p-value of < 0.05 was considered significant. Results: Among 192 eligible patients, 144 patients (75%) had a central venous catheter. Twenty-eight patients (19.4%) had developed CVC-AI with density rate incidence 20.02/1000 CVC-days. Among these infections, 60.7% (n=17) were systemic CVC-AI (with negative blood culture), and 35.7% (n=10) were bloodstream CVC-AI. The mean SAPS II of patients with CVC-AI was 32.76 14.48; their mean Charlson index was 1.77 1.55, their mean duration of catheterization was 15.46 10.81 days and the mean duration of one central line was 5.8+/-3.72 days. Gram-negative bacteria was determined in 53.5 % of CVC-AI (n= 15) dominated by multi-drug resistant *Acinetobacter baumani* (n=7). Staphylococci were isolated in 3 CVC-AI. Fourteen (50%) patients with CVC-AI died. Univariate analysis identified men (p=0.034), the referral from another hospital department (p=0.03), tobacco (p=0.006), duration of sedation (p=0.003) and the duration of catheterization (p=0), as possible risk factors of CVC-AI. Multivariate analysis showed that independent factors of CVC-AI were, male sex; OR= 5.73, IC 95% [2; 16.46], p=0.001, Ramsay score; OR= 1.57, IC 95% [1.036; 2.38], p=0.033, and duration of catheterization; OR=1.093, IC 95% [1.035; 1.15], p=0.001. Conclusion: In a monocenter cohort, CVC-AI had a high density and is associated with poor outcome. Identifying the risk factors is necessary to find solutions for this major health problem.

Keywords : central venous catheter associated infection, intensive care unit, prospective cohort studies, risk factors

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