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Epidemiology of Healthcare-Associated Infections among Hematology/Oncology Patients: Results of a Prospective Incidence Survey in a Tunisian University Hospital

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Abstract : Background: In hematology/oncology, health care improvement has allowed increasingly aggressive management in diagnostic and therapeutic procedures. Nevertheless, these intensified procedures have been associated with higher risk of healthcare associated infections (HAIs). We undertook this study to estimate the burden of HAIs in the cancer patients in an onco -hematology unit in a Tunisian university hospital. Materials/Methods: A prospective, observational study, based on active surveillance for a period of 06 months from Mars through September 2016, was undertaken in the department of onco-hematology in a university hospital in Tunisia. Patients, who stayed in the unit for ≥ 48 h, were followed until hospital discharge. The Centers for Disease Control and Prevention criteria (CDC) for site-specific infections were used as standard definitions for HAIs. Results: One hundred fifty patients were included in the study. The gender distribution was 33.3% for girls and 66.6% boys. They have a mean age of 23.12 years (SD = 18.36 years). The main patient's diagnosis is: Acute Lymphoblastic Leukemia (ALL): 48.7 %(n=73). The mean length of stay was 21 days +/- 18 days. Almost 8% of patients had an implantable port (n= 12), 34.9 % (n=52) had a lumber puncture and 42.7 % (n= 64) had a medullary puncture. Chemotherapy was instituted in 88% of patients (n=132). Eighty (53.3%) patients had neutropenia at admission. The incidence rate of HAIs was 32.66 % per patient; the incidence density was 15.73 per 1000 patient-days in the unit. Mortality rate was 9.3% (n= 14), and 50% of cases of death were caused by HAIs. The most frequent episodes of infection were: infection of skin and superficial mucosa (5.3%), pulmonary aspergillosis (4.6%), Healthcare associated pneumonia (HAP) (4%), Central venous catheter associated infection (4%), digestive infection (5%), and primary bloodstream infection (2.6%). Finally, fever of unknown origin (FUO) incidence rate was 14%. In case of skin and superficial infection (n= 8), 4 episodes were documented, and organisms implicated were Escherichia.coli, Geotricum capitatum and Proteus mirabilis. For pulmonary aspergillosis, 6 cases were diagnosed clinically and radiologically, and one was proved by positive aspergillus antigen in bronchial aspiration. Only one patient died due this infection. In HAP (6 cases), four episodes were diagnosed clinically and radiologically. No bacterial etiology was established in these cases. Two patients died due to HAP. For primary bloodstream infection (4 cases), implicated germs were Enterobacter cloacae, Geotricum capitatum, klebsiella pneumoniae, and Streptococcus pneumoniae. Conclusion: This type of prospective study is an indispensable tool for internal quality control. It is necessary to evaluate preventive measures and design control guides and strategies aimed to reduce the HAI's rate and the morbidity and mortality associated with infection in a hematology/oncology unit.

Keywords : cohort prospective studies, healthcare associated infections, hematology oncology department, incidence
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