

Session: P097 Understanding and managing *Clostridium difficile*

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Incidence rate of *Clostridium difficile* infection and associated risk factors in hospitalized patients: Hacettepe Adult and Oncology Hospitals

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Background: *Clostridium difficile* is a fecal-oral transmitted, Gram-positive, anaerobic, spore-forming bacillus. *Clostridium difficile* infection is associated with increased morbidity, mortality, cost and prolonged hospitalization among hospitalized patients. The aim of this study is to determine *Clostridium difficile* infection rate and related risk factors in hospitalized patients in our tertiary healthcare center.

Material/methods: Study population was defined as all patients who were hospitalized between May 2010 and July 2014. A nested case-control study was conducted where cases were those aged 18 years and older, hospitalized for at least 72 hours, developed diarrhea and had positive nucleic acid amplification test for *Clostridium difficile* Toxin B. Controls were matched to cases (n=60) on type of inpatient service (like medical, surgical or intensive units), with a ratio of 1-to-4. Controls were randomly selected from the patients who were being hospitalized for at least 72 hours at the time matched case's stool sample was collected.

Results: *Clostridium difficile* infection incidence was 0.78 per 10,000 patient-days or 0.78 per 1000 patients. Incidence rates were 1.40 per 10,000 patient-days in intensive care units, 1.79 per 10,000 patient-days in medical units and 0.15 per 10,000 patient-days in surgery units. Duration elapsed from hospital admission to the sampling time was similar in case and control groups, but the time period

from sampling to discharge was longer in case group ($p=0.04$). Direct health-care costs were also found to be higher among cases ($p=0.03$). In univariate analysis, immunosuppression status, history of bone marrow transplantation and chemotherapy, diagnosis of leukemia and inflammatory bowel disease, the use of colistin, glycopeptides, carbapenems and antifungal agents, low levels of hemoglobin and albumin were found to be statistically significantly associated with *Clostridium difficile* infection. In multivariate logistic regression analysis, inflammatory bowel disease and carbapenems were found to be significant predictors of *Clostridium difficile* infection. Charlson Comorbidity Index, age distribution, mechanical ventilation use, history of surgery, enteral and parenteral nutrition, use of gastric acid suppressive agents and rate of fatality were all similar across case and control groups.

Conclusions: As the largest case-control study reported from Turkey, it was found that *Clostridium difficile* infection incidence was 0.78 per 10,000 patient-days. In previous prospective studies from European countries, it was reported that *Clostridium difficile* incidence was 2.45 (0.13 – 7.1) and 4.1 (0 – 36.3) per 10,000 patient-days respectively. In this study, infection rate was revealed to be comparable with these ranges. *Clostridium difficile* infection was revealed to be associated with life-threatening conditions such as, bone marrow transplantation and leukemia, prolonged hospitalization and higher cost. Appropriate infection control measures are necessary to prevent the spread of the infection.