DNA Fingerprinting of Clostridium Difficile Isolated from Different Sources by AP- PCR Methods

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Backgroun& Objectives: *Clostridium difficile* is considered as the main etiological agent of hospital acquired antibiotic associated diarrhea and pseudomembranous colitis. The aim of this study was to investigate epidemiological and molecular relationships of isolates by AP-PCR.

Methods: Three hundred and eighty five samples including 250 stool specimens and 135 environmental samples from various regions of the hospital were collected. Specimens were cultured and suspected colonies were identified by biochemical tests and gas liquid chromatography as complementary test Then 84 *C. difficile* isolates were typed by AP- PCR methods.

Results: Out of 84 *C. difficile* isolates which were cultured for the first time in north west of Iran, 18%, 10.4%, 32%, 44% and 28% were isolated from staff, hospital environment, patients at first day of admission, the same patients after seven days of hospitalization and symptomatic patients, respectively. Recovery rate of *C. difficile* in the pulmonary ward was 35.7%. *C. difficile* was most frequently culturedfrom doorknobs (13.3%). The results obtained showed that 12% of hospitalized patients were colonized by *C. difficile* during seven days of hospitalizations. All 84 *C. difficile* were confirmed by production of isovaleric and isocaproic acids using GLC technique. All isolates were separated into 12 genotypes by AP-PCR Methods, with 31% falling into group I.

Conclusion: Stool culture is an important methods for investigation of *C. difficile*. Typing by AP-PCR distinguish different strains of *C. difficile* and trace their spread in the hospital environment. *C. difficile* is frequently transmitted among hospitalized patients, staff, and their hospital environment. Preventive measures are needed to reduce nosocomial acquisition of *C. difficile.*

Keywords: *Clostridium difficile*; Arbitrarily Primed- PCR; Gas Liquid Chromatography