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Determination of uropathogenic virulence-associated genes in *Escherichia coli* isolated from patients with urinary tract infection

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Background: A urinary tract infection (UTIs) is the most common infection among community and hospitalized patients in the developing countries. Uropathogenic *Escherichia coli* (UPEC) isolates are major cause of UTIs and may be responsible for nearly 90% of UTIs. UPEC isolates express a range of virulence traits promoting effective colonization of urinary tract.

Aim: The current work was conducted to determine *pap* (pyelonephritis associated pili), *sfa* (S fimbrial adhesin) and *aer* (aerobactin) genes in *E. coli* strains isolated from patients with urinary tract infection, who referred to public hospitals of Sirjan city (Kerman, Iran), between December 2016 and June 2017.

Materials and Methods: In this cross-sectional study, 217 urine samples from the patients infected with UTI were examined. Microbiological culture media such as blood agar and MacConkey agar were used for pathogen isolation. Identification of *E. coli* was done by standard biochemical tests. Also, susceptibility testing was performed using the disk diffusion method in line with Clinical Laboratory and Standard Institute. Then, DNA extraction was performed from all strains and PCR assay was conducted for the presence of virulence genes including *pap, sfa* and *aer*.

Results: Totally, 105 *E. coli* strains were isolated from 217 urine samples of patients admitted to the public hospitals of Sirjan city (Kerman, Iran). Eighty-four (80 %) strains were isolated from female patients and 21 (20 %) from male patients. A significant difference was found between the occurrence of UPEC in female and male patients ($P < .05$). According to the molecular analyses, *aer* (32.38%) was the most prevalent among the *E. coli* isolates, followed by *pap* and *sfa* (10.47%, and 8.57%, respectively).

Conclusion: In conclusion, the prevalence of multiple virulence genes show the potential to adhere and subsequently cause a systemic infection among UTIs patients. Further studies are needed to determine UPEC virulent factors responsible for UTI.

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