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Paper Poster Session
E.coli and Proteus virulence

Clonal diversity and virulence characteristics of UPEC strains with their adhesion capability on Caco-2 and A-498 cell lines

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Background: *E. coli* is known to be the primary etiological agent causing about 90% of all community acquired UTIs. These pathogenic strains differ from commensals in terms of virulence factors that are responsible for evasion of host immune defence, injury to host cells, liberation of nutrients (Fe^{3+}), colonisation of urothelium etc. This study aims (i) to determine the clonal relationships of *E. coli* strains causing community urinary tract infection (UTI) in pediatic&adult patients (ii) to reveal the virulence factors of the UTI-causing *E. coli* (UPEC) strains and (iii) to demonstrate the their interactions with Caco-2 (GI epithelium) and A-498 (renal epithelium) cell lines.

Material/methods: In order to achieve these goals UPEC strains isolated from children (age 0-16) and adults (age 17-91) were enrolled in the study. The urine samples to be analyzed were delivered to Erciyes University Bacteriology Laboratory and conventional methods were used for the isolation and confirmation of *E. coli* strains. Typing of *E. coli* was performed using a biochemical fingerprinting method (i.e. PhP-typing). Isolates showing similarity above 97.5% were considered as identical. Single representatives from each identical group (common types, CTs) were chosen for further analysis. The presence of 12 virulence genes related to adhesins (*nfaE, papG allelel, papC, papG allele II and III, afa/draBC and sfaS*) toxins (*cnf1* and *hlyA*) and capsule synthesis (*kpsMT K5, rfc, and kpsMT II*) were tested using multiplexed PCR. All representatives were tested for adherence to Caco-2 and A-498 cell lines.

Results: The total number of *E. coli* samples isolated from patients with UTI was 226 (children = 127 adult=99). Based on PhP-typing method, children isolates were grouped in 26 CTs, adults were in 13 CTs. 39 representative strains from these 39 CTs were screened for virulence genes. According to PCR results (i) 24% of UPEC found to be harbour at least one virulence genes, (ii) children & adults encoded *papC* genes in similar frequencies, (iii) *kpsMT* K5 gene was more prevalent among the adults (17.4%) than the children (3%) and (iv) Dr adhesins, O4, & Type II capsular synthesis genes were found in the adults only. According to the adhesion assay, the children isolates have significantly greater adherence to both cell lines ($P < 0.001$) when compared to the adults.

Conclusions: PhP-typing method suggested that, community diversity was high among the strains tested. Thus, dissemination or expansion of dominant UPEC clones are yet to take place within Turkish community. Increased adhesion rates among children might be indicating that gut & kidneys are potential translocation sites for UPEC in children. However, an investigation of the translocation capacities of these strains via translocation assay is needed.