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Fluoroquinolone resistance among CTX-M producing uropathogenic *Escherichia coli* from HIV and non-HIV patients in South India

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Background

Extended spectrum β-lactamase (ESBL) especially, the CTX-M producing *Escherichia coli* has emerged world wide as the leading cause of community onset UTI in the era of antibiotic resistance. The CTX-M producers often exhibit co-resistance towards fluoroquinolones and are a growing challenge to patient care. The purpose of this study was to determine the incidence of fluoroquinolone resistance among CTX-M producing uropathogenic *E.coli* (UPEC).

Methods

UPEC isolated from HIV (n=76) and non-HIV antenatal patients (n=42) were screened for ESBL production as per CLSI guidelines. $bla_{CTX\text{-}M}$ was detected by PCR. Susceptibility to ciprofloxacin was assessed as per CLSI guidelines. Fisher's exact test (two tailed) was employed to analyze the statistical significance of the results.

Results

ESBL producers were more common among the UPEC isolates from HIV compared to those from non-HIV patients (75% vs 52.4%, p=0.015, OR=2.7273). Significant difference was observed in the incidence of $bla_{CTX\text{-}M}$ among the ESBL producers from HIV and non-HIV patients (70.2% vs 31.8%, p=0.002, OR=5.042). Compared to the CTX-M non-producers, majority of the CTX-M producers were resistant to ciprofloxacin in both the groups (HIV, 92.5% Vs 58.8%, p=0.0037, OR=8.6333, and non-HIV, 71.4% vs 20%, p= 0.5235, OR=10).

Conclusion

Fluoroquinolones are the most common non-β lactam antibiotic used in the treatment of infections caused by ESBL producing organisms. The results of our study suggest the possible emergence of plasmid mediated fluoroquinolone resistance among the CTX-M producing *E. coli*. The co-resistance exhibited by the CTX-M producers is a cause of concern, as it might facilitate the co-selection process.

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