

Flouroquinolones Resistant *Escherichia Coli* Isolated from Urine of Diabetics

Sir,

Amongst the common risk factors of urinary tract infection (UTI) is immunosuppressed status, such as diabetes mellitus (DM),¹ a metabolic disorder of prolonged high blood sugar levels.² Hyperglycemia and glycosuria account for dysfunctional neutrophils.³

Patients with diabetes are predisposed to UTIs and the most frequently encountered microorganisms are *Escherichia coli*, *Klebsiella pneumoniae*, and *Candida* spp.⁴

During May-October 2018, overall 1,520 urine specimens from diabetic inpatients were received in Rehman Medical Institute, Peshawar for culture and sensitivity testing, among which 486 (32%) were catheterised patients. Seven hundred and ten specimens (46.7%) yielded consideration bacteriuria; 223 urine samples (14.6%) exhibited no growth and 587 urine specimens (38.6%) displayed mixed growth. The different organisms isolated from urine specimen culture were *E. coli*, which was the most dominant, accounting for 57.7% (n=410) of the uropathogens. Others were: 15.2% *Klebsiella pneumoniae* (n=108), 11.5% *Pseudomonas aeruginosa* (n=82), 6.2% *Enterococcus* species (n=44), 5.2% *Proteus* spp. (n=37), 2.7% *Citrobacter* spp. (n=19) and 1.4% *Candida* spp. (n=10).

Among total *E. coli* isolated, 56% (n=230) were recovered from female inpatients and the rest 44% (n=180) were from male admitted patients. Mean age of the patients was 58 years (age range on 40-75 years). One hundred and eighty four (45%) isolates were recovered from patients of Cardiac Care Unit (CCU), while the remaining 55% (n=226) were from patients admitted in different wards including Internal Medicine Ward (n=127, 31%), Urology Ward (n=41, 10%), Intensive Care Unit (n=37, 9%), and Surgical Ward (n=21, 5%). Primary susceptibility testing was performed in accordance with Clinical and Laboratory Standard Institute (CLSI) guidelines; 91% (n=373) were (norfloxacin and ciprofloxacin resistant and 9% (n=37) were flouroquinolones sensitive. Among these, 85.2% (n=350) isolates of *E. coli* were MDR.

During investigation, empirical therapy was perceived to have commenced in all cases. Among which, (n=350) 82% received flouroquinolones, ceftriaxone (n=37) 9%, and in the remaining few amoxicillin-clavulanate, nitrofurantoin and trimethoprim-sulfamethoxazole were used.

In this study, 85.2% cultured *E. coli* were multi-drug resistant, which is relatively on rise when equated to others studies. Multidrug resistant *E. coli* was 52.9% in an Indian hospital setting⁵, and 7.1% in another research study by Sahm *et al.* in USA.⁶ We perceived a substantial escalation in resistance to flouroquinolones namely, norfloxacin and ciprofloxacin, that might be owing to empirical treatment practices for UTI. The same response was also noted in Uruguay, a state having widespread flouroquinolones use for UTI empirical management.⁷ By this assessment, we have construed that flouroquinolones will no longer be adequate for use against UTI due to *E. coli* in roughly next 20 years. The chief acumen for escalation in resistance is the lack of antibiotic stewardship measure, attributable to social and economic disputes in most nations.⁸ The escalating resistance to flouroquinolones in *E. coli* from urinary tract infections may emerge from augmented prescription for UTI. *E. coli* resistance to these agents will probably upsurge further as flouroquinolone use increases in future.

CONFLICT OF INTEREST:

Authors declared no conflict of interest.

AUTHORS' CONTRIBUTION:

MK: Conception or design of the work.

AI: Critical revision of the article.

FZ, TG: Data collection.

JA, FL: Data analysis and interpretation.

SH: Drafting the article.

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