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Trimethoprim sulfamethoxazole drug resistance with co resistance to extended spectrum β-lactam antibiotics among bacterial isolates from HIV patients

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Background

Trimethoprim-sulfamethoxazole (TMP-SMX) is a broad spectrum antimicrobial agent and also reduces the mortality among adults and children when used as prophylaxis against opportunistic infections in HIV infected patients. Drug resistant to TMP-SMX along with Extended spectrum β-lactamase (ESBL) production among Enterobacteriaceae is creating major therapeutic problem in clinical settings for treating the bacterial infections among HIV individuals.

Methods

TMP-SMX drug resistance among the isolates was identified using Kirby-Bauer disc diffusion method and ESBL production by combination disc method (CDM). Cefotaxime (30μg) and cefotaxime/clavulanic acid (30μg/10μg) discs were placed 20 mm apart on the agar surface. Similarly, the ceftazidime (30μg) and ceftazidime/clavulanic acid (30μg/10μg) discs were also placed. After incubating overnight at 37°C, a ≥ 5mm increase in the zone diameter was interpreted as positive for ESBL production. Statistical analysis was done using SPSS software version 15.0.

Results

A total of 103(40 *Escherichia coli*, 15 *Klebsiella pneumoniae*, 13 *Pseudomonas aeruginosa*, 10 *Klebsiella oxytoca*, 8 *Proteus mirabilis*, 2 *Proteus vulgaris*, 11 *Staphylococcus aureus*, 3 *Staphylococcus epidermidis* and 1 *Streptococcus* sp.) bacterial strains were isolated from HIV patients. Among these 65(63.10%;p=0.008) isolates were resistance to TMP-SMX and only 40(38.83%;p=0.023) isolates were resistant to extended spectrum β-lactam antibiotics. Twenty nine ESBL producers from HIV patients were found to be co resistant to TMP-SMX. All ESBL producing isolates showed resistance to ceftazidime and also for ceftazidime/clavulanic acid combination.

Conclusion

A rapid increase in the use of prophylactic TMP-SMX might be responsible for the TMP-SMX drug resistance among opportunistic bacterial infections in HIV patients.

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