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ePoster Viewing

Antimicrobials: epidemiology of MDR Gram-negatives

Risk factors for community-acquired acute pyelonephritis caused by extended-spectrum beta-lactamase-producing *Escherichia coli* in a university hospital in Tunisia

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Objectives: Escherichia coli is the most common pathogen in community-acquired acute pyelonephritis (CA-AP). The changed epidemiology of extended-spectrum beta-lactamases (ESBL), the spread to the community and the need for prudent use of carbapenems require updated knowledge of risk factors for infection with ESBL-producing *E. coli* (ESBL-E). The aim of this study was to describe the epidemiology, clinical and microbiological features of CA-AP and to determine risk factors of uropathogenic ESBL-E.

Methods: Study included all patients admitted for CA-AP caused by *E. coli,* at Infectious Diseases department in the University Hospital of Monastir between 1999 and 2014. Clinical and epidemiological features were collected. Patients aged > 14 years who presented temperature ≥ 37,8°C, flank pain and/or costovertebral tenderness, urinary tract symptoms, leukocyte count > 10^4/ml and bacteriuria > 10^5/ml were enrolled. Identification of *E. coli* was performed by API20E. The study of antibiotic susceptibility was performed by agar diffusion according to CA-SFM. Univariate analyses were run to describe the distribution, central tendency and variability. Covariates found to be associated with ESBL- producing *E. coli*, on univariate analysis at a level of significance $p<0.01$, were eligible for inclusion in a multivariate logistic regression model. SPSS version 17.0 was used for analysis.

Results: A total of 484 cases of CA-AP were included. Mean age was 45 years (14–89) and 309 (63.8%) were female. Mean Duration of hospitalisation was 12 days (5-90). Dominant comorbidities were diabetes (24.4%), urinary lithiasis (8.9%), and menopause (27%). History of urinary tract infection was noted in 145 cases (30%), of hospitalisation in the last six months (7.6%) and of antibiotherapy in the three months (14%). Forty six strains (9.5%) were resistant to fluoroquinolones, twenty four (5%) were ESBL-producing. In univariate analysis, ESBL-E was correlated to urinary catheterization ($p=0.001$), antibiotic use in the previous three months ($p<0.001$), urological abnormalities ($p=0.03$) and diabetes ($p=0.02$). After multivariate analysis, factors correlated to isolation of ESBL-E were: diabetes (OR=2.96, 95%IC=1.09-8, $p=0.032$), urological abnormalities (OR=3.46, 95%IC=1.038-11.45, $p=0.043$) and antibiotic use in the previous three months (OR=4.04, 95%IC=1.6-10, $p=0.003$). Resistance to gentamicin, amikacin, fluoroquinolones, cotrimoxazol and imipenem was significantly high in ESBL-E versus non ESBL-E strains ($p<0.001$).

Conclusion: CA-AP due to ESBL- producing E. coli strains are increasing in Tunisia. Efforts are needed to curtail the increase of resistance and empiric antimicrobial regimens should be evaluated. Antimicrobial stewardship programs must be implemented.