ECA 2021

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Conference Proceedings Paper

Urinary tract infections in elderly patients at a tertiary-care hosptial in Hungary: a 10-year study on their epidemiology and antibiotic resistance based on the WHO AWaRe classification †

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† Presented at the 1st International Electronic Conference on Antibiotics—The Equal Power of Antibiotics And Antimicrobial Resistance Global Safety Evaluation Workshop, Online, 8 –17 May 2021.

Abstract: *Introduction:* The ageing of the population – especially in developed countries – has brought on many societal challenges and has significantly contributed to the burden on healthcare infrastructures worldwide. Urinary tract infections (UTIs) are the third most common infections in humans, representing an important factor of morbidity, both among outpatients and hospitalized patients. The elderly are at a higher risk of developing UTIs, both due to anatomical and physiological changes, lifestyle factors, immobility and the frequent use of urinary catherers. *Materials and methods:* A retrospective observational study was performed at a 1820-bed primary- and tertiary-care teaching hospital (University of Szeged) regarding the epidemiology and resistance of UTIs in patients aged ≥65 years. Identification of the isolates was carried out using VITEK 2 ID/AST and MALDI-TOF MS. Antibiotic resistance in these isolates was assessed based on the WHO AWaRe (*Access, Watch, Reserve*) classification of antimicrobials. *Results:* During the 10-year study period, n=4214 (421.4±118.7/year) and n=4952 (495.2±274.6) laboratory-confirmed UTIs were recorded in inpatients and outpatients, respectively. The patients presented with the following demographic characteristics: a. outpatients: median age: 75 years (65-96), 39.7% male; b. inpatients: median age: 76 years (65-98), 71.3% male. The causative agents showed differentiation among inpatients and outpatients: *Escherichia coli* (25.7% vs. 48.1%; p=0.001), *Enterococcus* spp. (21.5% vs. 20.2%; p>0.05), *Klebsiella* spp. (16.3% vs. 16.2%; p>0.05), *Pseudomonas* spp. (13.4% vs. 4.4%; p=0.001); *Proteus-Providencia-Morganella* group (11.1% vs. 4.6%; p=0.001); *Candida* spp. (5.9% vs. 0.5%; p=0.001); *Citrobacter-Enterobacter-Serratia* group (2.9% vs. 1.8%; p<0.05). *Conclusions:* Significant differences were observed in the resistance rates among inpatient and outpatient isolates for many Access and Watch antibiotics; in addition, resistance rates were higher in these UTI pathogens, compared to the previously recorded rates in the region. Continuous surveillance of resistance rates in bacteria affecting vulnerable patient populations is needed for antimicrobial stewardship and to ensure the selection of appropriate therapy in these patients.

Keywords: elderly; ageing; urinary tract infection; epidemiology; AWaRe; antibiotic; stewardship

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Funding: M.G. was supported by the János Bolyai Research Scholarship (BO/00144/20/5) of the Hungarian Academy of Sciences. The research was supported by the ÚNKP-20-5-SZTE-330 New National Excellence Program of the Ministry for Innovation and Technology from the source of the Na-tional Research, Development and Innovation Fund. M.G. would also like to acknowledge the support of ESCMID's "30 under 30" Award.

Institutional Review Board Statement: The study was deemed exempt from ethics review by the Institutional Review Board, and informed consent was not required as data anonymity was maintained.

Informed Consent Statement: Not applicable.

Data Availability Statement: Not applicable.

Acknowledgments: None.

Conflicts of Interest: The author declares no conflict of interest.