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Resistance Rates to 3rd Generation Cephalosporins and Carbapenems in *Serratia marcescens* Isolates Obtained from Various Clinical Samples from Two Bulgarian Hospitals †

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Abstract: Aim: *Serratia marcescens* is a bacterial species associated with different types of infections including hospital acquired. The aim of this study was to examine the resistance rates to 3rd generation cephalosporins and carbapenems in *S. marcescens* isolates obtained from various clinical samples of patients hospitalized in two Bulgarian University hospitals. **Materials and methods:** A total of 180 non-duplicate clinically significant isolates of *S. marcescens*, collected during the period 2017–2021 were examined: blood, n = 19; urine, n = 64; respiratory tract secretions, n = 36; wounds, n = 44; others, n = 17. Species identification and antimicrobial susceptibility testing were done by Phoenix (BD) and Vitek 2 (bioMerieux) automated systems. Double Disc Synergy Test (DDST) was used as screening test for detection of ESBL (Extended Spectrum Beta-Lactamase) production. **Results**: A total of 89 isolates (49.4%) were resistant to 3rd generation cephalosporins. Among these isolates, the DDST was positive in 32.2% (n = 58). Isolates, resistant to 3rd generation cephalosporins were most commonly obtained from patients in Nephrology (n = 31), Urology (n = 12) and ICU (n = 12). The highest rate of 3rd generation cephalosporin resistance was found among the urine isolates (25.6%, n = 46), followed by blood (7.2%, n = 13) and wound isolates (5%, n = 10). In the studied collection of 180 isolates, cefepime resistant were 47.8% (n = 86). Three isolates, resistant to 3rd generation cephalosporins were susceptible to cefepime. Carbapenem resistance in the whole collection was 3.3% (n = 6). **Conclusion:** The high rates of 3rd generation cephalosporin resistance and ESBL production among clinically significant isolates of *S. marcescens* and the detection of carbapenem-resistant isolates are worrisome trends, because are associated with infections with very limited treatment alternatives and usually in immunocompromised patients.

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