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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Introduction

- *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. (fig.1)
- 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.

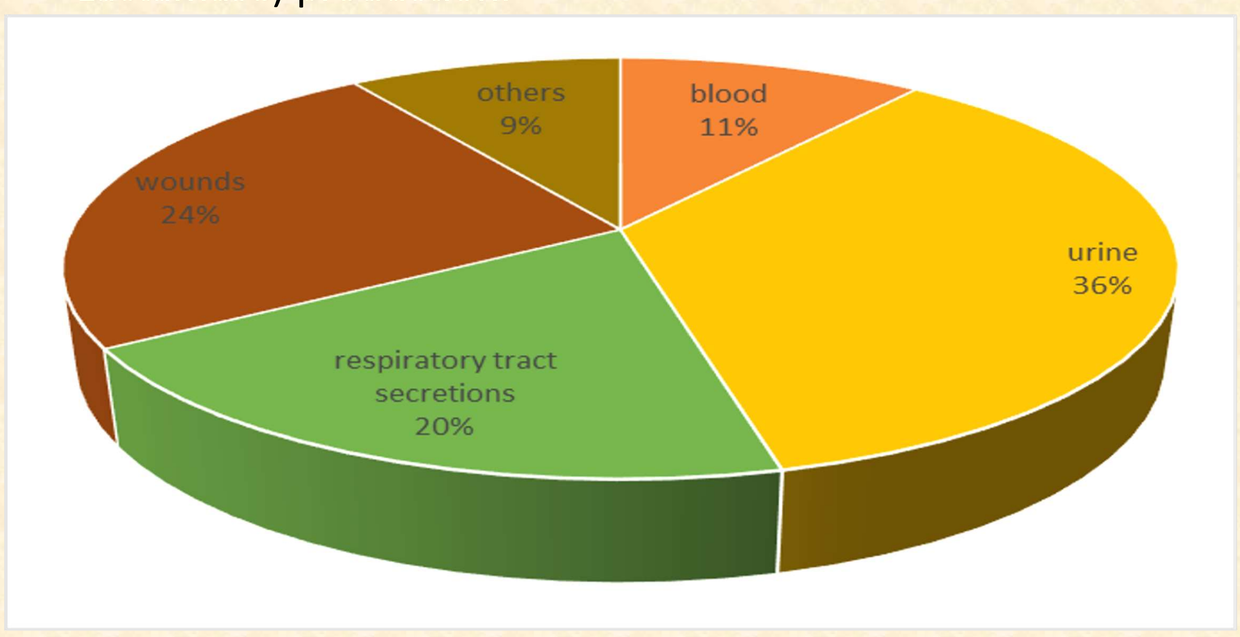

Figure 1. Isolates of *S.marcescens*

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). (fig.2)

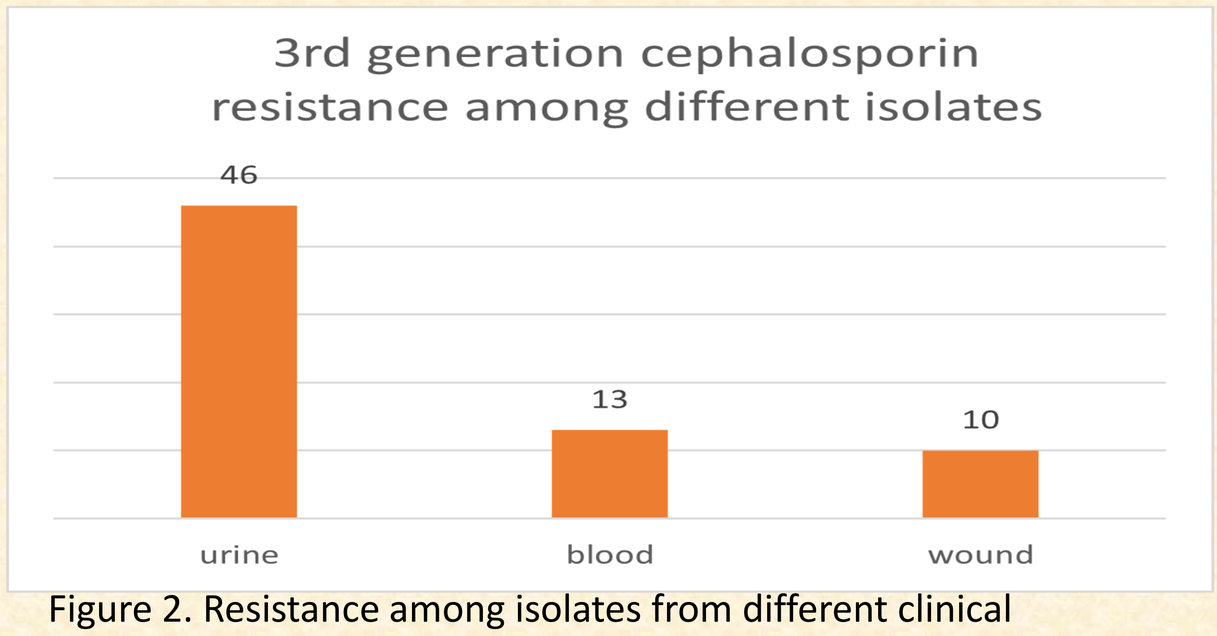

Figure 2. Resistance among isolates from different clinical samples

- 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.

Acknowledgements

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PROSPERITAS VESTRA FINIS NOSTRA!

УНИВЕРСИТЕТСКА МНОГОПРОФИЛНА БОЛНИЦА ЗА АКТИВНО ЛЕЧЕНИЕ "СВЕТА МАРИНА" ЕАД

МБАЛ Света Анна-Варна" АД" гр. Варна