

Carbapenem sparing antibiotic resistance breaker ? Ceftriaxone Sulbactam EDTA– A study

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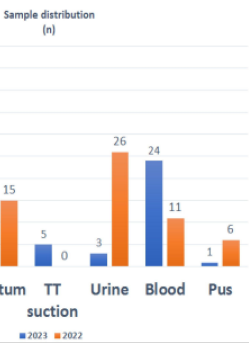
Introduction: A larger proportion of infection in hospitals ranging from pyaemia to bacteraemia is caused by Gram negative bacteria.¹ A significant increase of MDR is now noted .^{1,2} CSE, an antibiotic adjuvant entity (AAE) is combination of ceftriaxone, sulbactam and disodium ethylene-diamine-tetraacetic acid (EDTA).^{3,4}

Objectives:

- 1 To determine the invitro susceptibility profile of Ceftriaxone sulbactam EDTA (CSE) in the Gram negative bacteria.
- 2 Comparison of the susceptibility profile of CSE to other antibiotics tested for the Gram negative bacteria.
- 3 Observation of any change in susceptibility pattern of CSE among the Gram negative bacteria over time

Materials and Methods: Two time frames were selected over 2022 and 2023. Total samples were 205 where 105 isolates were taken from 2023 and 100 isolates from 2022

Results

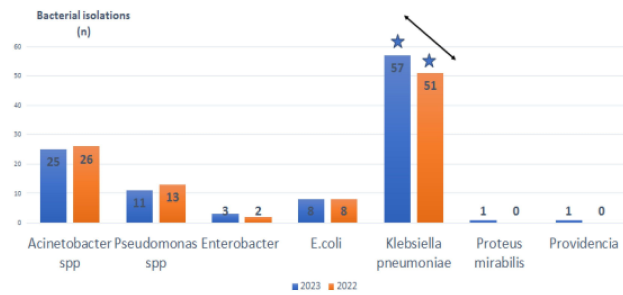


Sample distribution 2022- 2023

Total sample size – 205 (n)
2023 – 105 (n)
2022 – 100(n)

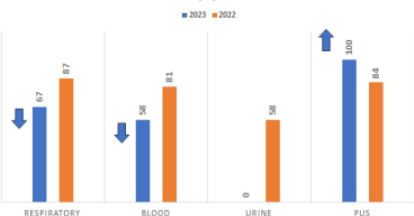
Endotracheal aspirates remain the maximum proportion of samples tested upon Followed by Blood and Sputum samples

Organisms isolated

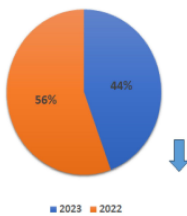


Multi drug resistant patterns

MDR PREVALENCE ACROSS VARIOUS SAMPLES (%)

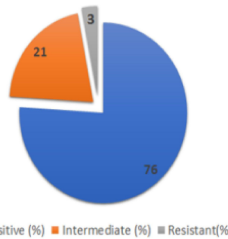


MDR prevalence (%)

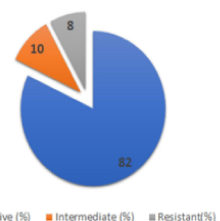


*Microorganism is resistant to at least one antimicrobial drug in three or more antimicrobial categories

Fermenter Gram negative bacilli

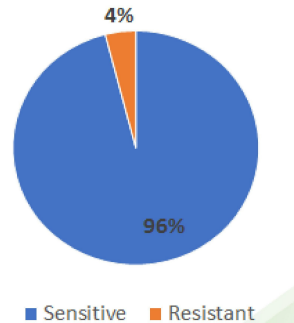


Non fermenter Gram negative bacilli

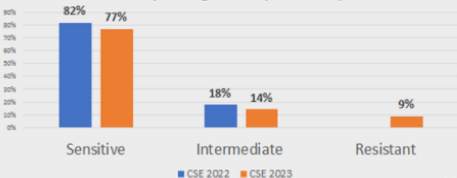


CSE sensitivity compared amongst Fermenter and Non fermenter Gram negative bacilli (%)

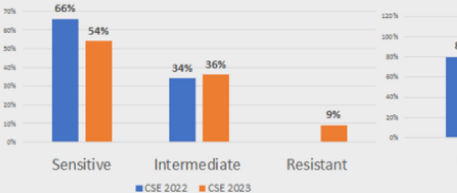
CSE sensitivity amongst all the isolates tested



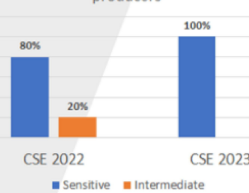
CSE sensitivity amongst Carbapenemase producers



CSE sensitivity amongst ESBL producers



CSE sensitivity amongst Penicillinase producers



Discussions: ARBs (antibiotic resistance breakers) are non-antibiotic molecules without any direct antimicrobial activity but in combination with currently failing antibiotic agents, they can overcome various resistance barriers. ^{5,6} CSE has shown an excellent In vitro susceptibility pattern in all the Gram negative bacteria isolated . Few resistant isolates were found in 2023 compared to 2022 . Resistance was found in Pseudomonas spp. 100% susceptibility observed in Urine and Pus isolates . Few resistant strains found in Respiratory (9%)and Blood samples (4%). Above 91% sensitivity noted in Carbapenemase and ESBL producers. 100 % sensitivity observed in Penicillinase producers . Pseudomonas spp shows lowest ZOI . E.coli ,Klebsiella and Acinetobacter shows almost all ZOI above 20mm.