Introduction:

Antimicrobial resistance is a global threat which now a well known matter. Out of which carbapenem resistance is growing which is very alarming. In India it is reported in the range of 12.26 to as high as 26.54%.

Material and Methods:

We performed sensitivity tests using Ezy MIC Strip in 20 consecutive meropenem resistant isolates of Klebsiella, Acinetobactor,Pseudomonas and E. Coli which were grown in standard media and sample taken from urine, sputum, pus, blood and endotracheal tube secretion.

Results and discussion:

Sl No	Sample	Organism	Meropenem MIC (ug/mL)	Meropenem + EDTA MIC (ug/mL)
1	Urine	Eschericihia coli	4	1
2	Sputum	Klebsiella pneumoniae	256	1.5
3	Pus	Eschericihia coli	48	1
4	Urine	Pseudomonas aeruginosa	16	1
5	Sputum	Pseudomonas aeruginosa	16	2
6	ET secretion	Acinetobacter baumannii	256	6
7	Urine	Eschericihia coli	4	1
8	Urine	Klebsiella pneumoniae	>256	>64
9	Pus	Klebsiella pneumoniae	>256	>64
10	ET secretion	Klebsiella pneumoniae	>256	>64
11	Urine	Klebsiella pneumoniae	>256	>64
12	Pus	Acinetobacter baumannii	>256	>64
13	Blood	Klebsiella pneumoniae	>256	12
14	ET secretion	Klebsiella pneumoniae	>256	>64
15	Urine	Eschericihia coli	8	1
16	Urine	Eschericihia coli	4	1
17	ET secretion	Klebsiella pneumoniae	16	1
18	Pus	Klebsiella pneumoniae	16	2
19	ET secretion	Klebsiella pneumoniae	48	1
20	ET secretion	Klebsiella pneumoniae	>256	>64

In all the 20 samples we tested for Metallobetalactamase presence, 10 are metallobetalactamase positive, 3 are metallobetalactamase negative and remaining 7 are metallobetalactamase non determinate meaning resistance is due to mechanisms other than metallobetalactamases. If you see the MIC values, all are substantially lower in Meropenem plus EDTA than Meropenem alone.

Conclusion:

Clinically if organism is Metallobetalactamase positive, carbapenem with EDTA can be suggested for clinical use.

References:

1. K. Nair, Pravin. (2013). Prevalence of carbapenem resistant Enterobacteriaceae from a tertiary care hospital in Mumbai, India. Journal of Microbiology and Infectious Diseases. 03. 207-210. 10.5799/ahinjs.02.2013.04.0110.
2. https://ccemjournal.com/emergence-of-carbapenem-resistance/

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