Introduction:

In view of worsen global antibiotic resistance which is causing serious health concerns, aminoglycosides are seen as promising due to their broad antimicrobial spectrum, bactericidal property which is rapid and synergistic nature with other drugs in life threatening infections. The mechanism of action is same like other aminoglycosides to inhibit protein synthesis by binding to 30s and 50s ribosomal subunits of susceptible bacterias.

Isepamicin is a semisynthetic aminoglycoside derived from actinomycetes *micromonospora* with superior action against those strains that produce type I 6′-acetyltransferase. Just like other aminoglycosides like amikacin it also has nephrotoxicity, vestibular toxicity, and ototoxicity, but is lower than its other counterparts. The spectrum of coverage is *Enterobacteriaceae* and staphylococci but anaerobes, *Neisseriae*, and streptococci are interestingly resistant. Isepamicin is safe and effective in acute pyelonephritis even in children and can be considered in high aminoglycoside resistance situations [1] .

Aims and Objectives:

In this study we tried to compare in vitro efficacy of isepamicin, amikacin and gentamicin in gram negative bacteria causing respiratory, urinary and bloodstream infections from both community and nosocomial source.

Materials and Methods:

We collected thirty consecutive positive Gram-negative bacterial isolates from both community and hospital-acquired infections, including Carbapenemase-producing strains, sourced from respiratory tract, urine, and blood samples at the Microbiology department. These isolates underwent antimicrobial susceptibility testing using the Kirby-Bauer disc diffusion method on Mueller-Hinton agar (Hi-Media), with interpretation based on the latest CLSI guidelines.

Results and Discussion:

In all isolates those are producing carbapenemases , isepamicin and amikacin showed resistance rate of 100% , but interestingly gentamicin is 22.22% susceptible. The exact mechanism of resistance is unknown because of unavailability of further testing methods in our institution.

For non carbapenemases isolates , isepamicin is showing 66.67% sensitivity as compared to sensitivity of amikacin which is 66.67% and gentamicin which is 41.66% sensitive.

The cohort of gram negative organisms are comprises of klebsiella pneumonia, acinetobacter baumanni, pseudomonas aeruginosa, proteus mirabilis and escherichia coli with mostly klebsiella pneumonia.

In belgian Isepamicin Multicenter Study Group which was published in 2001, they found 91% sensitivity of isepamicin in 1087 gram negative bacilli isolates from icu of 11 different hospitals in comparison to amikacin which was 89% susceptible and gentamicin which was 88% susceptible [2] . In a study done in houston , USA it was found that isepamicin is as stable as amikacin as it is not inactivated by the presence of beta lactam compounds and beta lactamase inhibitors. It was also found that heparin presence did not influence isepamicin iactivation [3] .

Conclusion:

In the current scenario of increasing antimicrobial resistance all over the world causing significant mortality and morbidity, the drug discovered in 1978 has lots of potentials in difficult to treat nosocomial as well as community acquired infections owing to its quick bactericidal property and lesser side effects in its own aminoglycoside community.

References:

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