Introduction:

Antimicrobial resistance (AMR) is “a global health security threat that requires action across government sectors and society as a whole” The World Health Organization (WHO) 1. In the United States alone, the Centers for Disease Control and Prevention (CDC) reports the excess direct healthcare costs due to AMR to be as high as $20 billion, and additional lost for impacted less productivity is as high as $35 billion a year 2.

Aims and Objectives:

The aims and objectives of this study is to calculate incidence of colistin resistance in the hospital. This is a real and the highest level of threat currently looming in the whole world. The other objective is to see the organism wise resistance pattern and other antibiotic options we have.

All positive isolates were included from microbiology lab. Which includes both community and hospital acquired infections and all samples were included from respiratory tract, urine and blood. The isolates were screened for antimicrobial susceptibility testing by Kirby-Bauer disc diffusion method on Mueller-Hinton agar (Hi-Media) and interpreted as per CLSI guidelines. The duration of sample collection is taken w.e.f. January 2017 to October 2018.

Results:

A total of 2220 positive isolates were taken in the study, of which 20 isolates were found to be Colistin resistant (0.95%). The resistant pattern of various organisms is shown in below table.

Bacteria Colistin Resistant	Total Cases	Percentage
Klebsiella	11	52.38%
Pseudomonas	6	28.57%
E.Coli	3	14.29%
Acinetobactor	1	4.76%
Total	21	100%

Pattern of resistance:

Organism	Average Length of stay (Days)	Outcome (Mortality)
Klebsiella	31	22%

E.Coli	13	0%
Pseudomonas	43	20%
Acinetobactor	17	0%

Discussion:

In a four year cross-sectional study in Spain in 2017 where 13579 Enterobacteriaceae isolates were taken, it was found that 91 were colistin-resistant. The overall prevalence of colistin resistance was 0.67%. The rates were like this, Enterobacter cloacae (4.2%), Escherichia coli (0.5%) and Klebsiella pneumoniae (0.4%) 3. In one more study 3,902 *E. coli* isolates were studied in Italy and colistin resistance found to be 0.5% 4.

In a study in Tamilnadu, India they found the prevalence of colistin resistance is 28.72% 5. In our study we found overall prevalence of colistin was 0.95%. The commonest bug developing resistance is Klebsiella (52.38%) followed by Pseudomonas (28.57%), E.Coli (14.29%) and Acinetobactor (04.76%). Although the number is less but Pseudomonas has the maximum hospital length of stay (43 days) and significant mortality among all (20%). The overall mortality was seen highest with Klebsiella (22%). The sensitive antibiotics seen was widely variable but the common are Tigecycline, PolymyxinB, Doripenem, Imipenem, Meropenem, Fosfomycin, Minocycline etc. Three of Pseudomonas isolates from blood are found to be resistant to all antibiotics.

Pattern according to isolates from blood, urine and respiratory tract:

Organism	Blood	Urine	Respiratory
Klebsiella	0	2	9
Pseudomonas	3	1	2
E.Coli	0	3	0
Acinetobactor	0	0	1

Klebsiella grew mainly in respiratory tract, Pseudomonas mainly in blood and E.Coli was seen mainly in urine. There was one colistin resistant isolate seen growing in respiratory tract.

Conclusion:

To conclude we should be aware of the danger looming above us regarding the emergence of colistin resistance and should focus on meticulous infection control measures and very

strict judicial use of these last weapon we have to fight against these tiny but most dangerous medical threat of the current era.

Declaration:

The same group of isolates were taken in our other study “Emergence of Carbapenem resistance: A retrospective study in a tertiary care Centre in North East India”. So this is the analysis of the colistin part. So the language and few other things are similar.

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