

Pan resistant *Acinetobacter baumannii* in a tertiary care hospital

Sir,

The emergence of multidrug resistance in *Acinetobacter baumannii* is a growing threat in any hospital. Resistance to carbapenems is increasingly reported, hence, Tigecycline and Colistin are the only available alternatives. Pan resistant isolates with Tigecycline and Colistin resistance are also on the rise. In India, only a few reports are available regarding the prevalence of pan resistant strains.^[1,2] This study was designed to determine the prevalence of pan resistant isolates by using the E-test based minimum inhibitory concentrations (MIC) detection method.

A total of 104 non-duplicate *Acinetobacter calcoaceticus-baumannii* complex species isolated from various clinical samples were included in the study. Species identification was confirmed by using the standard laboratory methods.^[3] Antibiotic susceptibility testing was done by Kirby-Bauer disc diffusion method on Mueller-Hilton agar. All the Imipenem resistant isolates were further tested for Tigecycline and Colistin susceptibility by determining the MIC using the E-strips (Hi media). Clinical and Laboratory Standards Institute clinical breakpoints were applied for Colistin, to determine the resistance ($S \leq 2$ and $R \geq 4 \mu\text{g/ml}$) and for Tigecycline break points were adopted as recommended by the other authors ($S \leq 2$ and $R \geq 8 \mu\text{g/ml}$).^[4,5] *Pseudomonas aeruginosa* ATCC 27853 and *Escherichia coli* ATCC 25922 were used as control strains.

Among 104 *Acinetobacter* isolates, 44 (42.3%) isolates were resistant to Imipenem. In these 44 isolates, 18 isolates (41%) were resistant to Tigecycline and seven isolates (16%) were resistant to Colistin. MIC of Tigecycline in the resistant isolates was ranging from 8 $\mu\text{g/ml}$ to $>256 \mu\text{g/ml}$. The seven isolates which were resistant to Colistin showed the MIC in the range of 6 $\mu\text{g/ml}$ -12 $\mu\text{g/ml}$ [Figure 1]. All these seven Colistin resistant isolates had the Tigecycline MIC more than 256 $\mu\text{g/ml}$ [Figure 2].

In total, out of 104 only 7 (6.7%) isolates were pan resistant. When considering the Imipenem resistant isolates, the pan resistant percentage was 16% (7/44). Our results correlate well with the study by Taneja et al.^[1] where 3.5% of total isolates and 16% of carbapenem-resistant isolates were pan drug resistant. Whereas in our study, the isolates showed only a marginal rise of Colistin MICs up to a maximum of 12 $\mu\text{g/ml}$, their study showed the MICs as high as 256 $\mu\text{g/ml}$.

To conclude, carbapenem resistance is a very commonly observed phenomenon among acinetobacter isolates,



Figure 1: *Acinetobacter* with Colistin minimum inhibitory concentrations (MIC) 12 mcg/ml

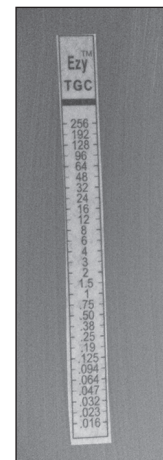


Figure 2: *Acinetobacter* with Tigecycline MIC $>256 \mu\text{g/ml}$

for which the only remaining therapeutic options being Tigecycline and Colistin. Development of resistance to these alternatives is also not uncommon. The present study shows that the prevalence of pan resistance in acinetobacter is still not very high in India with a majority of the isolates being susceptible to Colistin with only marginally high MICs, however, the increasing Tigecycline resistance with very high MICs is of concern.

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