

Klebsiella pneumoniae in Blood and Antimicrobial Sensitivity Pattern in Sub Himalayan Region, HP

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Abstract: Introduction: *Klebsiella pneumoniae* belongs to family Enterobacteriaceae and is a developing multidrug resistant organism. It is responsible for infections in immunocompromised and nosocomial infections. Aim: To study the frequency of *Klebsiella pneumoniae* in blood samples and its sensitivity pattern. Method: Total 552 of blood samples from October 2019 to November 2021 were included in the study. The culture isolates showing *Klebsiella pneumoniae* were isolated and identified by their colony characters and biochemical reactions. The isolates were processed for antibiotic sensitivity testing by modified Kirby-bauer disc diffusion method. Results: *Klebsiella pneumoniae* was isolated in 38 blood samples. On antimicrobial sensitivity testing, maximum isolates showed sensitivity to Amikacin followed by ampicillin-sulbactam. Conclusion: the resistant strains of *Klebsiella* are in increasing trend. Therefore, monitoring of sensitivity patterns helps for better antibiotic stewardship.

Keywords: *Klebsiella pneumoniae*, Kirby-Bauer method, antibiotic sensitivity.

1. Introduction

Klebsiella pneumoniae is one amongst the common opportunistic bacterial which is associated with nosocomial and community-acquired infections^{1, 2}. It is a gram-negative bacilli which is seen in human intestine and as saprophyte in water and soil³.

The biochemically typical strains of *Klebsiella pneumoniae* are resistant to a various antibiotics which includes Ampicillin and Amoxclav⁴.

2. Material and Methods

A 4, 249 blood samples were collected from outdoor and indoor patients in DRPGMC, Kangra at Tanda, HP from October 2019 to November 2021. Out of them 552 cultures were observed for growth. Amongst which 38 (6.88%) blood culture showed growth of *Klebsiella pneumoniae*. The identification of the organism was done on the basis of morphological characters of the colony and biochemical reactions. Further, the organism was tested for antimicrobial sensitivity Kirby-bauer disc diffusion method.

The antimicrobial sensitivity testing was performed using Amikacin 30 µg, Doxycycline 30 µg, Levofloxacin 5 µg, Ampicillin-Sulbactam 10/10 µg and Pipatz 100/10 µg.

3. Results

Total 4, 249 blood samples were collected and inoculated on blood agar and MacConkey agar media and overnight incubation was done at 37°C. The culture growth was obtained in 552 media plates. Amongst which 38 isolates showed growth of *Klebsiella pneumoniae* after overnight incubation (figure1).

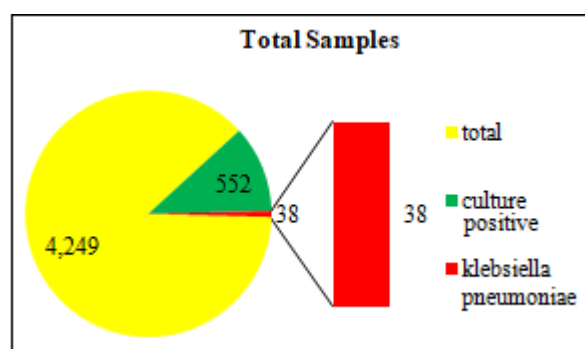


Figure 1: Sample distribution (Total, growth positive and *Klebsiella pneumoniae*).

The maximum sensitivity was seen in Amikacin 60.52% (23/38) followed by Ampicillin-Sulbactam 50% (19/38) (figure 2).

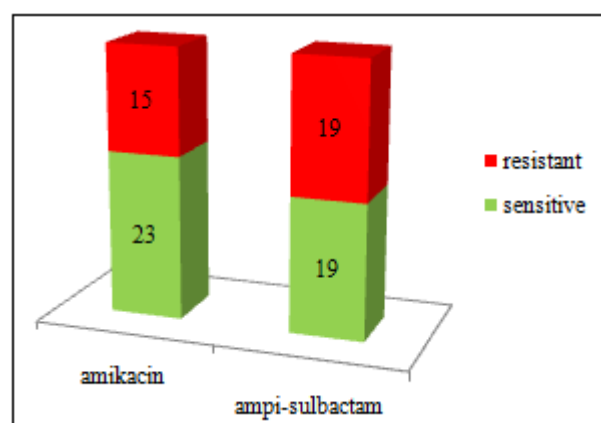


Figure 2: Number of *Klebsiella pneumoniae* sensitive and resistant to Amikacin and Ampicillin-sulbactam.

4. Discussion

In present study, 552 blood cultures showed growth after aerobic overnight incubation. Amongst them, 38 showed *Klebsiella pneumoniae* growth.

The antimicrobial testing was done for *Klebsiella pneumoniae* by disc diffusion method. The disc strength

30µg for Amikacin is used for which the organism showed maximum sensitivity which was in concordance with study done by Radji M et al in which various other organisms were also recorded⁵.

Similar results are also obtained in study done by Colodner R et al⁶.

5. Conclusion

As antibiotic resistance is rapidly devolving in common organisms, it is important to record the supervise the sensitivity patterns of these organisms. It helps in better selection for the drug for the infection caused by the organism and a step towards successful antimicrobial stewardship.

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