

A Study Of Secondary Bacterial Infections In Covid Patients Admitted In King George Hospital

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Abstract:

Background: 32 million population are affected by COVID-19 throughout the world . Because of the virus and drug induced immune suppression secondary bacterial infections are becoming a major threat to critically ill patients .They tend to increase the mortality rate in the population .

Materials and Methods: From 100 COVID positive patients who are admitted in King George Hospital the following samples like blood ,urine ,sputum were collected and the patient history was taken .Tests for bacterial isolation was conducted on media like on blood agar ,MacConkey agar ,chocolate agar and biochemical reactions are done for confirmation.

Results:In this study among 100 samples,30 samples are blood,20 samples are sputum,50 samples are urine. So out of 30 blood samples ,20 samples are culture positive(66%) they are *Pseudomonas aeruginosa*: 7(23%),*Staphylococcus aureus*:6(20%),*Escherichia coli*:3(10%),*Klebsiella*:4(13%).Out of 20 sputum samples,2 are culture positive that is coagulase positive *Staphylococcus aureus*:2(10%).Out of 50 urine samples,20 are culture positive(40%):Coagulase negative *Staphylococcus aureus*:2(10%),*Escherichia coli*:9(45%),*Klebsiella*(9%).

Conclusion: : Finally the conclusion is that COVID-19 positive patients showing high burden of infections due to multi drug resistant gram negative organisms causing blood stream infections are more common

Key Word: Blood stream infections ,Multi drug resistant gram negative organism,COVID-19

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I. Introduction

COVID-19 is a pandemic that has affected more than 32 million patients throughout the world . It can be asymptomatic , mild , moderate or severe depending on disease progression and immune status.Viral respiratory infections often disrupts immunity , as it disrupts airway epithelium and respiratory barrier due to virus induced immune mediated damage causing dysregulation of both innate and adaptive immunity leading to increased colonization of bacteria.Secondary bacterial infections occur in succession to primary infections , co-infections are caused by multiple pathogens of virus , bacteria or fungal origin and occur simultaneously at the same time.Combination of virus and drug induced immunosuppression increases the susceptibility to secondary bacterial infections.

II. Material And Methods

From 100 COVID positive patients who are admitted in Tertiary Care Hospital, the following samples like blood, urine , sputum where collected and patient history was taken from June to August 2021.Tests for bacterial isolation was conducted on media like Blood agar, Macconkey agar, Chocolate agar and biochemical reactions are done for confirmation. All the samples were processed and the organisms were isolated and identified as per the standard laboratory protocol.

Study Design: Prospective open observational study

Study Location: This was a tertiary care teaching hospital based study done in Department of MICROBIOLOGY, at King George Hospital, Visakhapatnam, Andhra Pradesh. (10)

Study DurationJune to August 2021

Sample size: 100 patients.

Sample size calculation: The sample size was estimated on the basis of a single proportion design. The target population from which we randomly selected our sample was considered 100. We assumed that the confidence interval of 10% and confidence level of 95%.

Inclusion criteria:

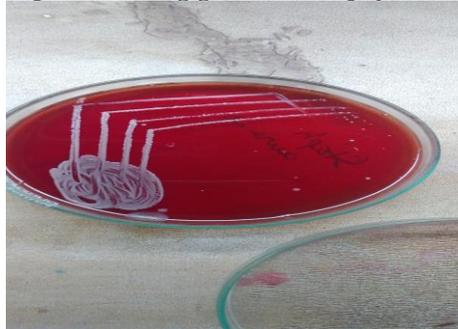
COVID patients with age group more than 25 years are included.

Exclusion criteria:

- Patients on current antibiotics are excluded.
- Patients who are not willing to give consent.
- Patients with fungal and other viral infections are excluded in my study.
- Patients less than 25 years are excluded.

Procedure methodology

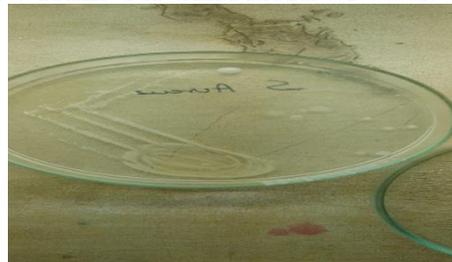
Blood agar plate showing growth of *Staphylococcus aureus*



Coagulase test



NUTRIENT AGAR PLATE OF S.aureus



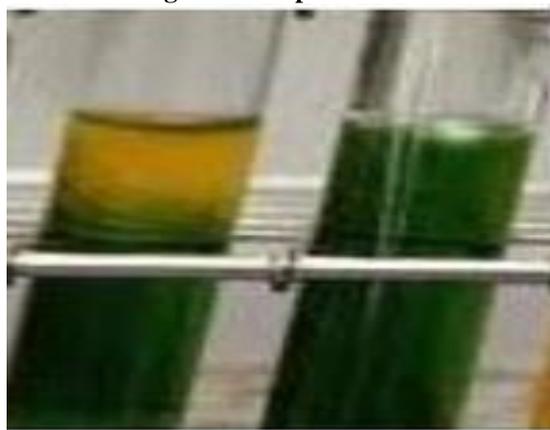
MANNITOL FERMENTATION



Nutrient agar showing pigmentation of *Pseudomonas aeruginosa*



OF test showing oxidative pattern of *Pseudomonas*



MacConkey agar plate showing growth of *klebsiella*



klebsiella TRIPLE SUGAR IRON

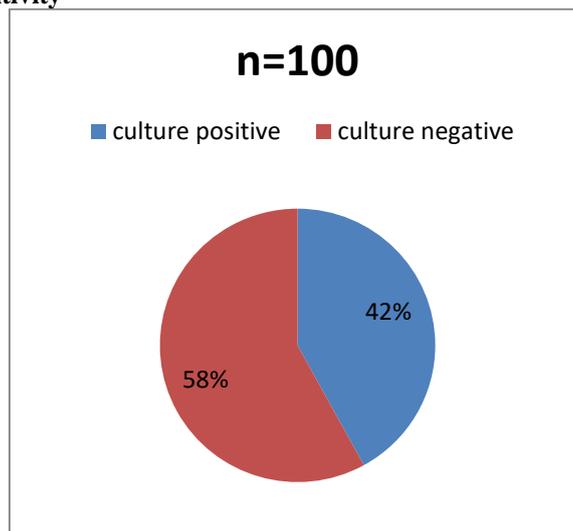


IMVIC REACTIONS OF KLEBSIELLA

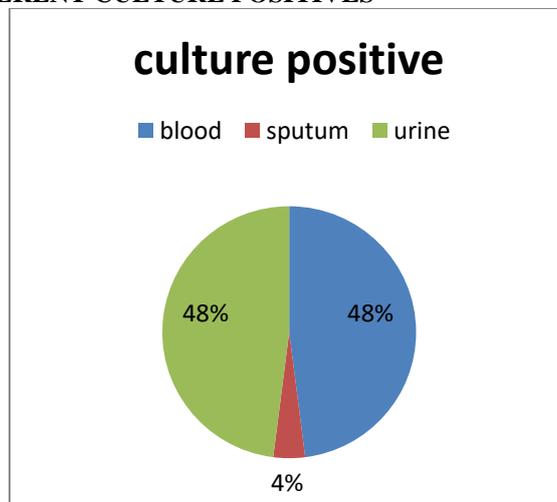


III. Result

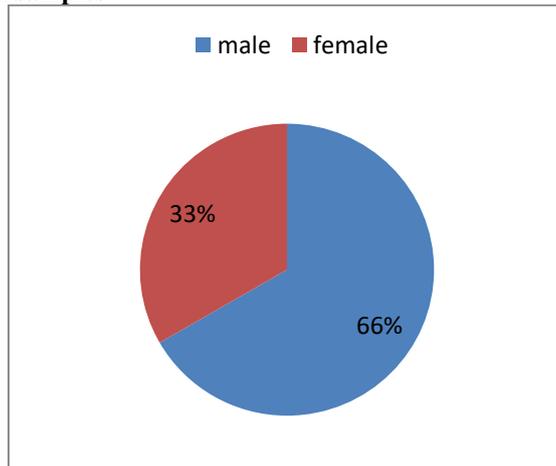
Distribution of culture positivity



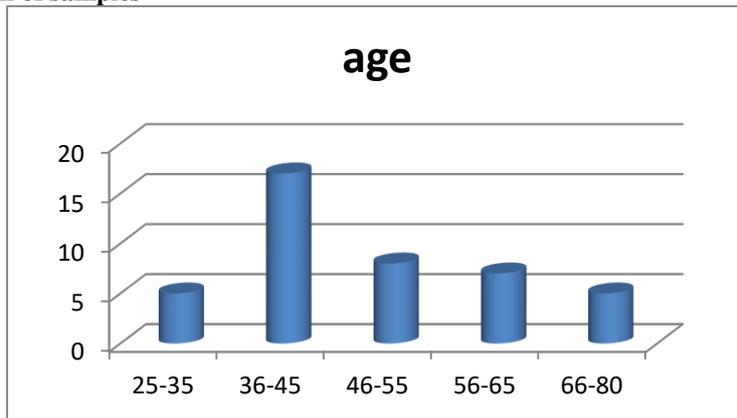
DISTRIBUTION OF DIFFERENT CULTURE POSITIVES



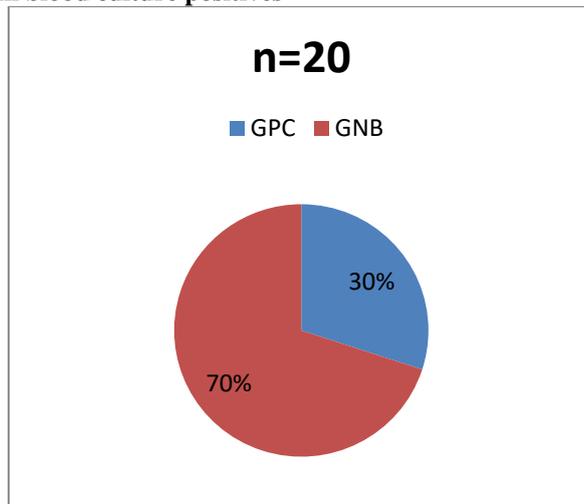
Sex wise distribution of total samples



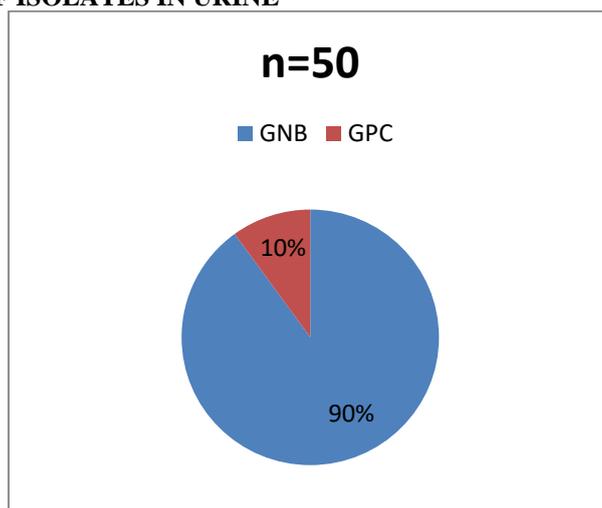
Age wise distribution of samples



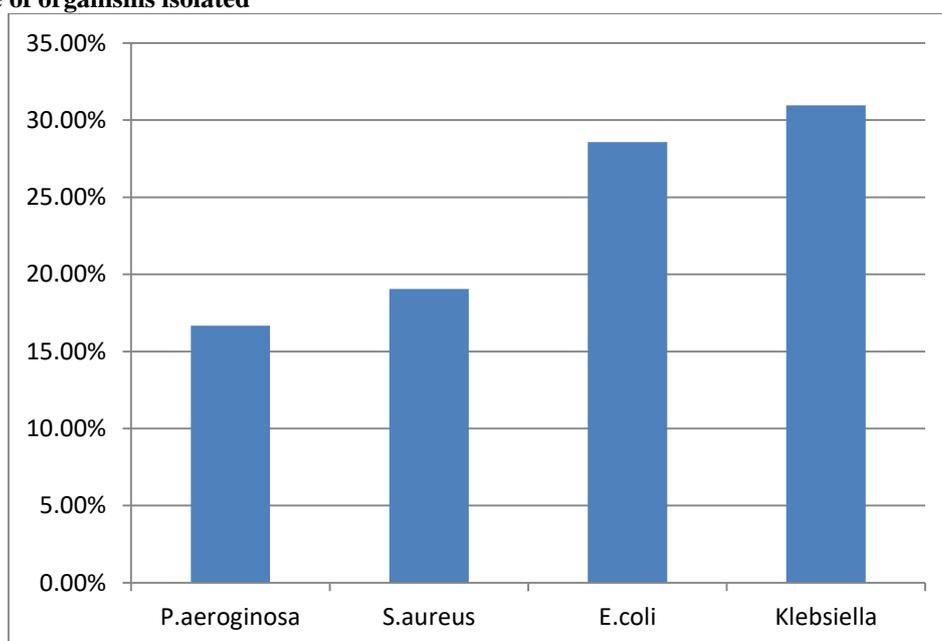
Characteristics of isolates in blood culture positives



CHARACTERISTICS OF ISOLATES IN URINE



Percentage of organisms isolated



Comparison of sex wise distribution of patients with other studies

	Males	Females
Present study	66.6%	33.3%
Surbhi Khurana et al	65%	35%
Vijay S et al	60%	25%

Comparison of age wise distribution with other studies

	Age group	Percentage
Present Study	25 – 49 yrs	52
Surbhi Khurana et al	1 – 49 yrs	53

IV. Conclusion

Finally the conclusion is that COVID-19 positive patients showing high burden of infections due to multidrug resistant gram negative organisms ,blood stream infections are more common with higher rates of morbidity and mortality associated with secondary bacterial infections.

References

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