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BACTERIOLOGICAL PROFILE AND ANTIBIOTIC SUSCEPTIBILITY PATTERNS OF ISOLATES IN CANCER PATIENTS

Microbiology

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ABSTRACT

- Cancers are one of the top global hygiene and health issues after cardiovascular diseases, traumatic accidents, and major crises in the world
- Starting early treatment of infection in patients whose immunity is weak due to malignancies can reduce the mortality
- Our aim of study is to isolate different bacteria causing various infections in cancer patients and their antibiograms

KEYWORDS

Cancer, infections, antibiogram

Introduction

- The cancer patient is immunocompromised because of the disease itself, chemotherapy, cytotoxic drugs, long term catheterization, multiple antibiotic therapy and neutropenia
- The increased risk of bacterial infection is further compounded by rising trends of antibiotic resistance
- It is true in case of Gram negative bacteria like Escherichia coli, Klebsiella species, Acinetobacter species and a high rate of MRSA in Gram positive cocci
- Emperical treatment of infection in the cancer patient is often arbitrarily attempted by administration of broad spectrum or combination antibiotics
- This could be made more evidence based if the clinician has adequate information on the spectrum of microorganisms and antibiograms prevalent in the particular setting

Aims and Objectives:-

1. To isolate different bacteria causing infections in cancer patients
2. To determine their antibiotic susceptibility patterns

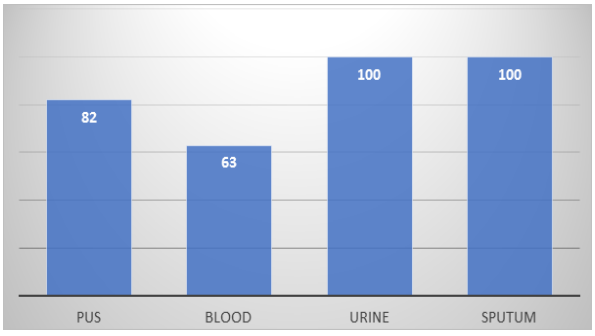
Materials and methods:-

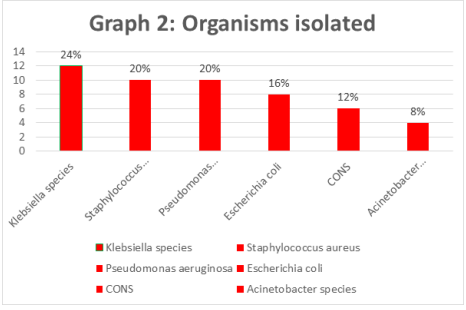
- A prospective study was conducted for a period of 3 months (September – November, 2018)
- 61 samples are collected from cancer patients who are having fever(blood), skin and soft tissue infections(pus), urinary tract infections(urine) and respiratory tract infections(sputum)
- Direct microscopy was done by Gram stain and inoculated onto NA, Mac, BA plates
- Identification by colony characterstics & biochemical reactions
- Antibiotic susceptibility tests were performed by Kirby-Bauyer's disk diffusion method

Results:

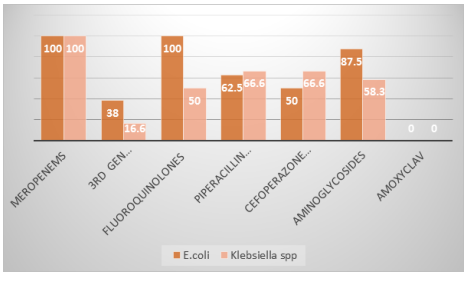
Culture positives in the study 50 (82%) (n=61)

Infection rate for individual samples:-
Graph 1:

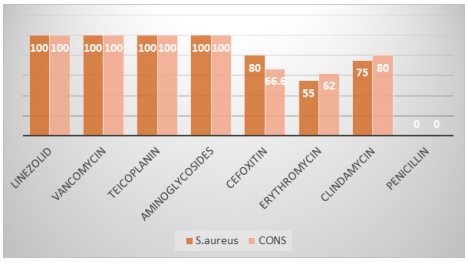




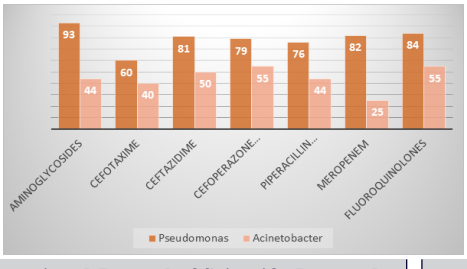
Antibiotic susceptibility patterns of Enterobacteriaceae:-
Graph 3:



Antibiotic susceptibility patterns of Gram positive cocci:-
Graph 4:



Antibiotic susceptibility patterns of Non-fermenters:-
Graph 5:



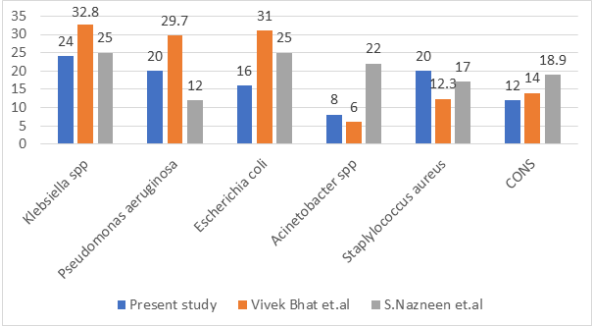
Discussion:-

- This study was undertaken to determine the effectiveness of prescribed drugs for treatment of infections in neutropenic conditions of cancer patients
- Pneumonia and bacteremia are common infections seen in cancer patients followed by urinary tract, skin and soft tissue infections
- The study population showed high numbers of bacteremia, skin and soft tissue infections and less numbers of urinary tract infections. The same outcome was also observed in another study by Vivek Bhat et al.

Percentages of categories of samples collected in the study period:-
Table 1:

Sample	Present study	Vivek Bhat et.al	S Nazneen et al.
Skin and soft tissue infections	40.9%	52.6%	42%
Blood	31%	25.6%	11.7%
Sputum	40.9%	11.5%	11.7%
Urine	19.6%	10.1%	44%

Comparison of no. of isolates with other studies:-
Graph 6:



Comparison of resistance patterns:-

- Klebsiella showed 83.3% resistance to 3rdgeneration cephalosporins in present study which is comparable with Vivek Bhat et.al which showed 78% resistance
- Klebsiella also showed 50% resistance to fluoroquinolones
- 75% of Acinetobacter species showed resistance to Meropenem which is also comparable with Vivek Bhat et.al which showed 67% resistance
- Of the Staphylococcus aureus isolates, 20% are methicillin resistant which is comparable with S.Nazneen et.al which showed 18% MRSA

Conclusion:

- Advances in early cancer diagnosis and new treatment strategies have improved the prognosis of cancer patients over the last decade. Unfortunately, severe infections continue to be among the important complications contributing significantly to the morbidity and mortality
- It is necessary to know the trends of bacteriological isolates in these patients so as to develop much needed antibiotic policy to combat these infections in a proper way by the clinician
- Administration of evidence based antibiotics at the beginning of manifestation of symptoms can prevent the spread of the disease, reduce rates of deaths, disabilities, complications due to cancer and finally decreases the resistance patterns

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