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A PROSPECTIVE OBSERVATIONAL STUDY ON MANAGEMENT AND OUTCOMES OF PNEUMONIA

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ABSTRACT

Background: Pneumonia is the most common lower respiratory tract infection. Pneumonia leads to hospitalization which requires ventilator support, oxygen therapy in sever cases. Vaccination is the prevention method for pneumonia. **Methodology:** Our research a prospective and observational study which involves 70 patients with pneumonia. The main objective of this study is to evaluate the management and outcomes of pneumonia. **Results:** In our study we found that common types of pneumoniae are Bacterial and viral pneumonia. Antibiotics, antivirals, antifungals, bronchodilators, mucolytics, antihistamines were primarily prescribed. PIPTAZ, AZEE, MAGNEXFORTE, are the major antibiotics FLUVIR, ACYCLOVIR, AMANTIDINE, are the major antivirals FLUCONAZOLE AND ANIDULAFUNGIN are the major antifungals BUDECORT, and DUOLIN were commonly used nebulizers. **Conclusion:** Antibiotics: 40.23% of patients were prescribed with PIPTAZ, AZEE, MAGNEXFORTE Antivirals: 10.35% of patients were prescribed with FLUVR Mucolytics: 17.04% of patients were prescribed with MUCINAC Corticosteroids: 24.14% of patients were prescribed with BUDECORT Antihistamines: 8.21% of patients were prescribed with RESUVAS, MONTEK L C.

INTRODUCTION

Pneumonia is a common acute respiratory infection that affects the alveoli and distal bronchial tree of the lungs. The disease is broadly divided into community-acquired pneumonia (CAP) or hospital-acquired pneumonia (HAP, which includes ventilation-associated pneumonia (VAP)). Aspiration pneumonia represents 5–15% of all cases of CAP; however, its prevalence amongst patients with HAP is not known.[1] The lack of robust diagnostic criteria for aspiration pneumonia may explain why the true burden of this type of pneumonia remains unknown.[1]

The causative microorganisms for CAP and HAP differ substantially. The most common causal microorganisms in CAP are *Streptococcus pneumoniae*, respiratory viruses, *Haemophilus influenzae* and other bacteria such as *Mycoplasma pneumoniae* and *Legionella pneumophila*. Conversely, the most frequent microorganisms in HAP are *Staphylococcus aureus* (including both methicillin-susceptible *S. aureus* (MSSA) and methicillin-resistant *S. aureus* (MRSA)), Enterobacterales, non-fermenting gram-negative bacilli (for example, *Pseudomonas aeruginosa*), and *Acinetobacter* spp.[2,3] In health-care-associated pneumonia (HCAP), owing to patient risk factors, the microbial aetiology is more similar to that in HAP than to that in CAP. However, difficulties in standardizing risk factors for this population, coupled with the heterogeneity of post-hospital health care worldwide, suggest that the concept of HCAP has little usefulness, and indeed, HCAP was not included in recent guidelines for CAP and HAP.[3,4,5]

Differences in microbiology between CAP and HAP depend on whether pneumonia was acquired in the community or health care environment and on host risk factors, including abnormal gastric and oropharyngeal colonization. In addition, the aetiopathogenesis of CAP is different from that of HAP. In general, mild CAP is treated on an outpatient basis, moderately severe CAP in hospital wards, and severe CAP in intensive care units (ICUs) with or without mechanical ventilation.[6] The need for mechanical ventilation is used as a sub-classification of interest for prognosis and stratification in randomized clinical trials.

Both CAP[7] and HAP[4] can occur in either immunosuppressed or immunocompetent patients. To date, most research data have been based on studies of immunocompetent patients and, therefore, we rely on such sources in this Primer. However, CAP, HAP and VAP in immunosuppressed patients have attracted the attention of researchers, and more investigation is to come.

In this Primer, we cover and summarize the most important and recent updates related to epidemiology,

pathophysiology, diagnostic screening, prevention, management, quality of life, and research perspectives. Additionally, owing to the profound impact of the coronavirus disease 2019 (COVID-19) pandemic caused by severe acute respiratory syndrome (SARS) coronavirus 2 (SARS-CoV-2), we summarize the main features of SARS-CoV-2 pneumonia.

Data from the 2019 Global Burden of Diseases (GBD) study[8] showed that lower respiratory tract infections (LRTIs) including pneumonia and bronchiolitis affected 489 million people globally. Children of <5 years of age and adults of >70 years of age are the populations most affected by pneumonia, according to the 2019 GBD study.[8] In 2019, there were 489 million incident cases of LRTI, and 11 million prevalent cases of LRTI. In the 2016 GBD study, the global incidence of LRTI was 155.4 episodes per 1,000 adults of >70 years of age and 107.7 episodes per 1,000 children of <5 years of age.[9] Finally, aspiration pneumonia contributes 5–15% of all cases of CAP and is associated with worse outcomes, especially in older patients with multiple comorbidities.[10,11] There is a lack of data about the incidence of aspiration pneumonia in patients with HAP.[1,12]

The main aim of the project is to study the management and outcomes of pneumonia in tertiary care hospitals. The objectives are to evaluate management and outcomes of pneumonia. Other objectives are evaluating the symptoms of pneumonia, Preform physical examination to confirm pneumonia, To investigate complications of pneumonia.

NEED FOR THE STUDY

Pneumonia is a common and potentially serious respiratory infection that effects in all age groups.

1. Study helps us better understand it's causes risk factors, prevention, treatment.
2. By studying Pneumoniae we can create awareness among people
3. We can develop effective vaccines and can reduce illness and public health.
4. This study can develop better treatment, thus reduces the likelihood of antibiotic resistance.
5. Improved patient outcomes and reduced complications.
6. Study outcomes help to educate the public and healthcare providers about pneumonia.

METHODOLOGY

STUDY SITE: Global aware hospitals, LB Nagar
STUDY DESIGN: An observational study.
STUDY PERIOD: 6 months.
SAMPLE SIZE: 70 subjects.

STUDY CRITERIA

INCLUSION CRITERIA: patient suspected with pneumonia.

Both male and female patients, patients who are willing to provide.

Patients who are conscious and cooperative, patients of pulmonology department.

EXCLUSION CRITERIA: Pregnant women, lactating women, patients who are not.
cooperative, psychiatric patients, patients who are too risk.

METHODS OF DATA COLLECTION: Patient data collection form, Informed consent form.

RESULTS

Distribution of Patients Based on Gender

Out of 70 patients, 42 (60%) were found to be males and 28(40%) were found to be females.

Table 1: Gender wise distribution.

Gender	Total no. of patients	percentage
Male	42	60%
Female	28	40%

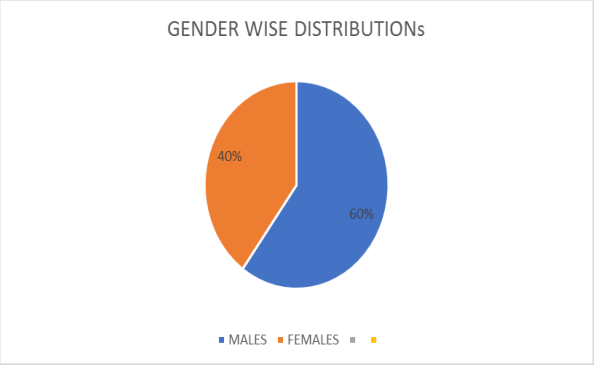

Figure 1: Gender wise distribution.

AGE WISE DISTRIBUTION OF PATIENTS

Total age was categorized at the interval of 10.
Out of 70 patients 8 patients (11.42%) were under the age group of 26-35, 6 patients (8.57%) were under the age group of 36-45, 16 patients (22.85%) were under the age group of 46-55, 8 patients (11.42%) were under the age group of 56-65, 24 patients(34.28%) were under the age group of 66-75, 8 patients (11.42%) were under the age group of 76-85.

Table 2: Age wise distribution.

AGE	TOTAL NO. OF PATIENTS
26-35	8
36-45	6
46-55	16
56-65	8
66-75	24
76-85	8

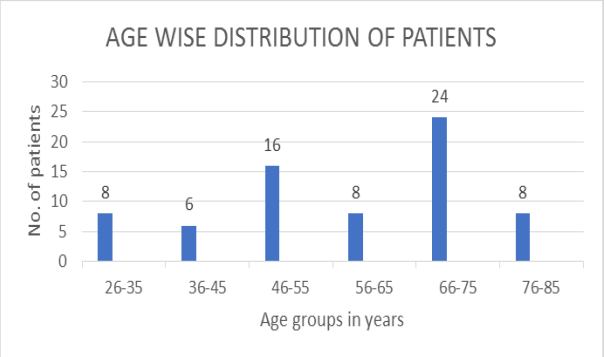

Figure 2: Age wise distribution.

PERCENTAGES OF AGE WISE DISTRIBUTION

Table 3: Percentages of age wise distribution.

Age	Percentage
26-35	11.42%
36-45	8.57%
46-55	22.85%
56-65	11.42%
66-75	34.28%
76-85	11.42%

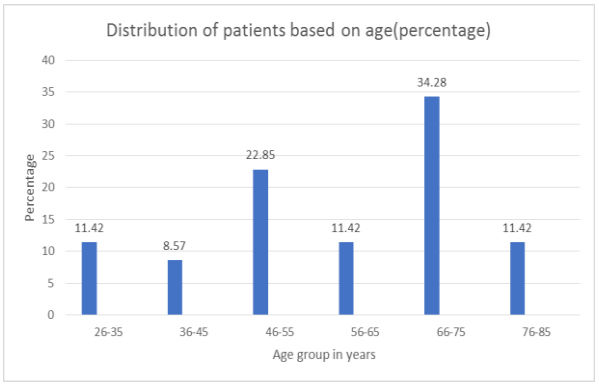

Figure 3: Percentages of age wise distribution.

AGE WISE DISTRIBUTION OF PATIENTS BASED ON GENDER

Out of 42 male patients, 2 patients were under the age group of 26-35, 6 patients under 36-45, 6 patients under 46-55, 6 patients under 56-65, 10 patients under 66-75, 8 patients under 76-85.

Out of 28 female patients, 6 patients were under 26-35, 0 patients were under 36-45, 10 patients were under 46-55, 2 patients were under 56-65, 14 patients were under 66-75, 0 patients were under 76-85.

Table 4: Age wise distribution based on gender.

Age	Males	Females
26-35	2	6
36-45	6	0
46-55	6	10
56-65	6	2
66-75	10	14
76-85	8	0

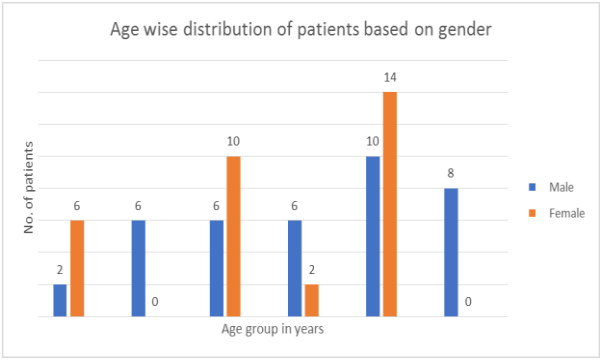

Figure 4: Age wise distribution based on gender.

DISTRIBUTION OF PATIENTS BASED ON COMORBIDITIES

Out of 70 patients, 58 patients (82.85%) had comorbidities and 12 patients (17.14%) had no comorbidities.

Table 5: Distribution based on comorbidities.

Comorbidities	No. of patients	Percentage
With comorbidities	58	82.85%
Without comorbidities	12	17.14%

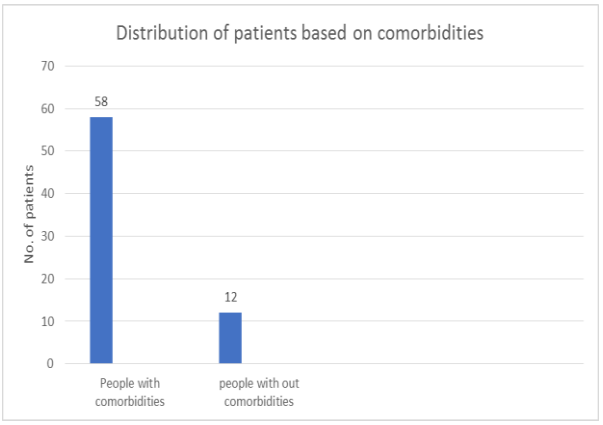

Figure 5: Distribution of patients based on comorbidities.

DISTRIBUTION OF PATIENTS WITH COMORBIDITIES BASED ON GENDER

Out of 58 patients with comorbidities, 32 patients (55.17%) were found to be males and 26 patients (44.82%) were found to be females.

Table 6: Distribution of patients with overall comorbidities based on gender.

Gender	Total no. of patients	Percentage
Males	32	55.17%
Females	26	44.82%

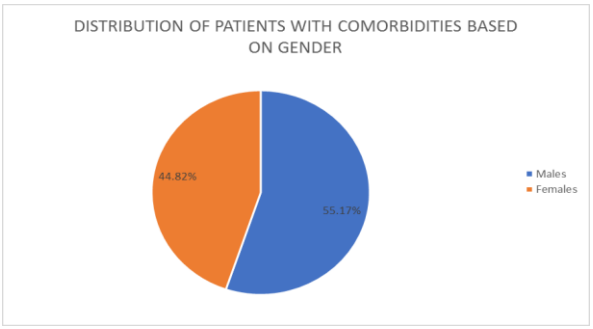

Figure 6: Distribution of patients with comorbidities based on gender.

DISTRIBUTION OF PATIENTS WITH INDIVIDUAL COMORBIDITIES BASED ON GENDER

Out of 42 male patients, 10 patients had no comorbidities, 2 patients were having Diabetes mellitus, 1 patient was having hypertension, 3 patients were having both Diabetes mellitus and hypertension, 9 patients were having asthma, 7 patients were having COPD, 8 patients were having bronchiectasis, 1 patient was having kidney disease, 1 patient was having other comorbidities.

Out of 28 female patients, 2 patients had no comorbidities, 1 patient was having Diabetes mellitus, 1 patient was having hypertension, 2 patients were having both Diabetes and hypertension, 7 patients were having asthma, 6 patients were having COPD, 5 patients were having bronchiectasis, 2 patients were having kidney disease, 2 patients were having other comorbidities.

Table 7: Distribution of individual comorbidities based on gender.

Comorbidities	Males	Females
Normal	10	2
Diabetes	2	1
Hypertension	1	1
DM+HTN	3	2
Asthma	9	7
COPD	7	6
Bronchiectasis	8	5
Kidney diseases	1	2
Others	1	2
TOTAL	42	28

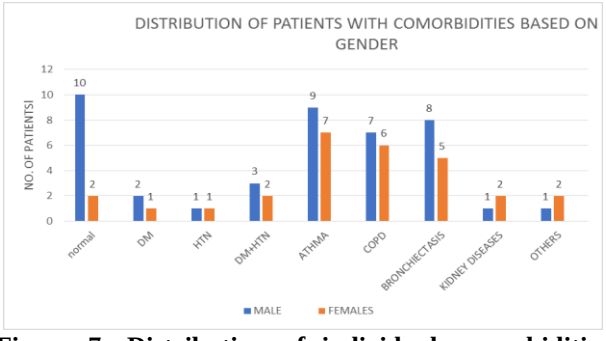

Figure 7: Distribution of individual comorbidities based on gender.

Table 8: Percentage of Comorbidities.

Comorbidities	Total	%
Normal	12	17.4%
Diabetes	3	4.28%
Hypertension	2	2.86%
DM+HTN	5	7.14%
Asthma	13	18.58%
COPD	16	22.86%
Bronchiectasis	13	18.57%
Kidney diseases	3	4.28%
Others	3	4.28%
TOTAL	70	100%

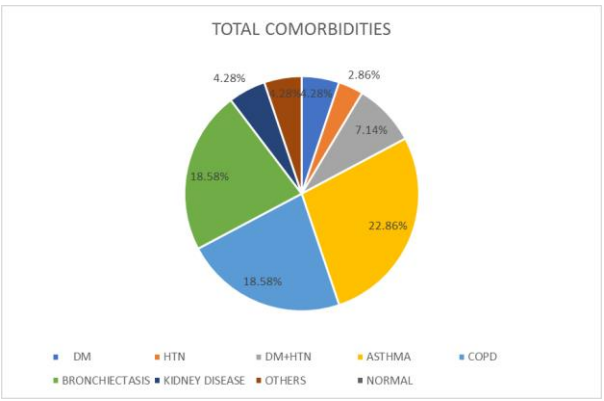

Figure 8: Percentage of distribution of comorbidities.

DISTRIBUTION OF PATIENTS BASED ON SYMPTOMS

Out of 70 patients, symptoms were observed in 70 patients (100%) and 0 patients (0%) had no symptoms.

Table 9: Distribution based on symptoms.

SYMPTOMS	No. of patients	percentage
With symptoms	70	100%
Without symptoms	0	0%

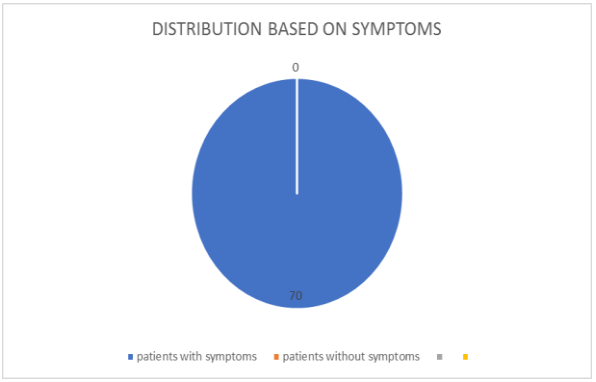

Figure 9: Distribution based on symptoms.

DISTRIBUTION OF PATIENTS BASED ON ANTIBIOTIC USAGE

Out of 70 patients, 18 patients (25.71%) were taking PIPTAZ, 17 patients (24.28%) were taking MAGNEX FORTE, 10 patients (14.28%) were taking DOXY, 7 patients (10%) were taking MONOCEF, 16 patients (22.85%) were taking AZEE, and 2 patients (2.85%)

were taking other antibiotics.

Table 10: Distribution based on antibiotic usage.

Antibiotics	No. of patients	%
PIPTAZ	18	25.71%
MAGNEX FORTE	17	24.28%
DOXY	10	14.28%
MONOCEF	7	10%
AZEE	16	22.85%
OTHERS	2	2.85%

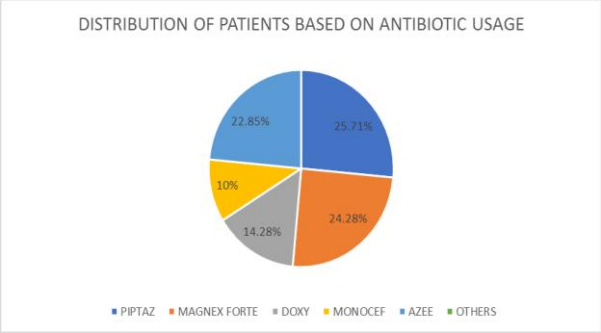

Figure 10: Distribution based on antibiotic usage.

DISTRIBUTION OF PATIENT BASED ON ANTIVIRAL USAGE

Out of 70 patients, 12 patients (60) were taking fluvir, 1 patient (5%) was taking ribavirin, 3 patients (15%) were taking acyclovir, 2 patients(10%) were taking amantadine, 2 patients (10%) were taking zanamivir.

Table 11: distribution based on antiviral usage.

Antivirals	No. of patients	%
Fluvir	12	60%
Ribavirin	1	5%
Acyclovir	3	15%
Amantadine	2	10%
Zanamivir	2	10%
Total	20	100%

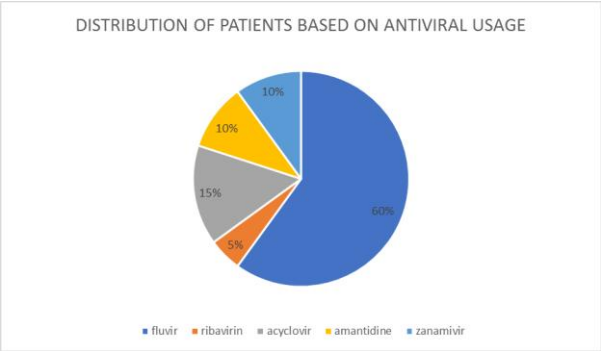

Figure 11: Distribution of patients based on antiviral usage.

DISRIBUTION OF PATIENTS BASED ON NEBULIZER USAGE

Out of 67 patients, 27 (40.29%) patients were taking Duolin, 23 (34.33%) patients were taking budecort 8(11.95%) patients were taking ceftazidime & (10.44) patients were taking gentamicin, 2 (2.98%) patients were taking tobramycin.

Table 12: Distribution based on nebulizer usage.

Nebulizer	No. of Patients	Percentage
DUOLIN	27	40.29%
BUDECORT	23	34.33%
CEFTAZIDIME	8	11.95%
GENTAMICIN	7	10.44%
TOBRAMYCIN	2	2.98%
TOTAL	67	100%

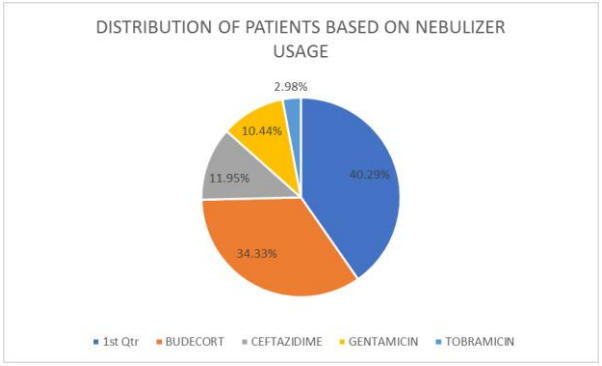

Figure 12: Distribution of patients based on nebulizer usage.

DISTRIBUTION OF PATIENTS BASED ON ANTIBIOTIC EFFICUCY

Out of the antibiotics used in pneumonia treatment PIPTAZ is showing 335 efficacy, MAGNEX FOTRE is showing 29% efficacy, doxycycline is showing 12% efficacy, MONOCEF is showing 8% efficacy, AZEE is showing 13% efficacy, other is showing 5% efficacy.

Table 13: Distribution of antibiotics based on efficacy.

Antibiotics	Percentage
Piperacillin + tazobactam	33%
Magnex forte	29%
Doxy	12%
Monocef	8%
Azee	13%
Others	5%

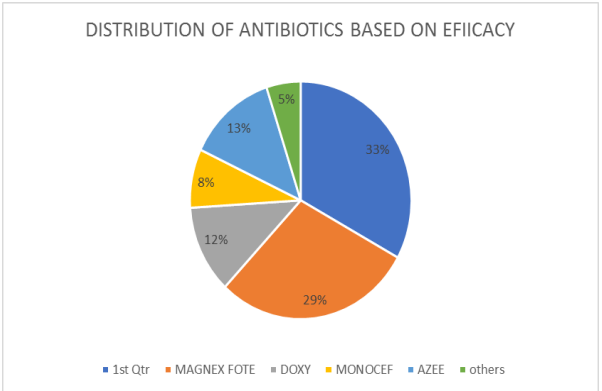

Figure 13: Distribution of antibiotics based on efficacy.

DISTRIBUTION OF PATIENTS BASED ON ANTIVIRAL EFFICACY

Out of antiviral used in the treatment of pneumonia fluvir is showing 42% efficacy, ribavirin is showing 8% efficacy, acyclovir is showing 23% efficacy, amantadine is showing 21% efficacy, zanamivir is showing 6% efficacy.

Table 14: Distribution of patients based on antiviral efficacy.

Antivirals	percentage
Fluvir	42%
Ribavirin	8%
Acyclovir	23%
Amantidine	21%
Zanamivir	6%

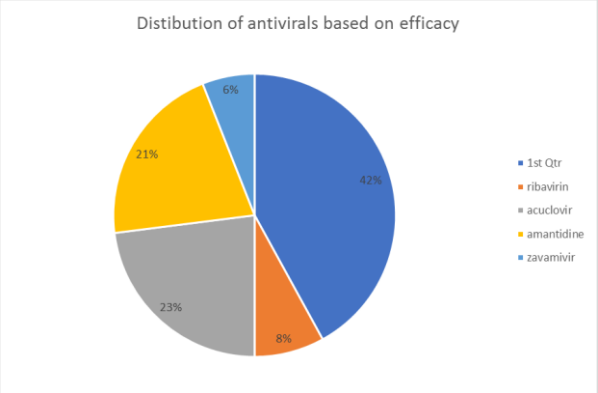

Figure 14: Distribution of antivirals based on efficacy.

DISTRIBUTION OF PATIENTS BASED ON TYPES OF PNEUMONIA

Out of 70 patients, 21 patients (30%) were having bacterial pneumonia, 24 patients (34.28%) were having viral pneumonia,4 patients (5.7%) were having fungal pneumonia, 11 patients (15.71%) were having CAP, 6 patients (8.57%) were having aspiration pneumonia, 2 patients (2.8%) were having VAP, 2 patients (2.8%) were having HAP.

Table 15: Distribution of patients based on types of pneumonia.

Types of pneumonia	No. of patients	%
Bacterial pneumonia	21	30%
Viral pneumonia	24	34.28%
Fungal pneumonia	4	5.7%
CAP	11	15.71%
Aspiration pneumonia	6	8.57%
VAP	2	2.8%
HAP	2	2.8%

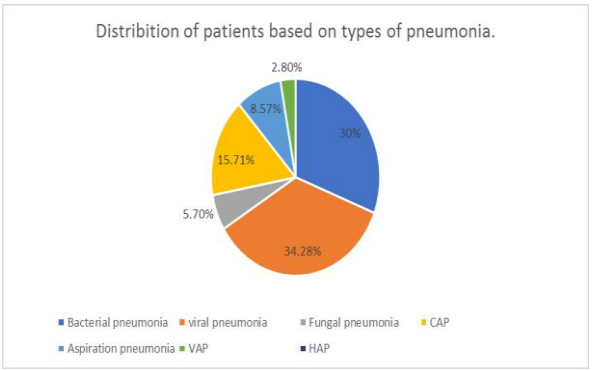

Figure 15: Distribution of patients based on types of pneumonia.

DISTRIBUTION OF PATIENTS BASED ON SYMPTOMS

Out of 70 patients, 18 patients(25.71%) were having cough with expectoration, 6 patients (8.57%) were having SOB, 3 patients(4.28%) were having chest pain, 21 patients(30%) were having fever, 4 patients(5.71%) were having generalized weakness, 16 patients(22%) were having dry cough, 2 patients(2.85%) were having wheezing.

Table 16: Distribution of patients based on symptoms.

Symptoms	No. of patients	%
Cough with expectoration	18	25.71%
SOB	6	8.57%
Chest pain	3	4.28%
Fever	21	30%
Generalized weakness	4	5.71%
Dry cough	16	22%
Wheezing	2	2.85%

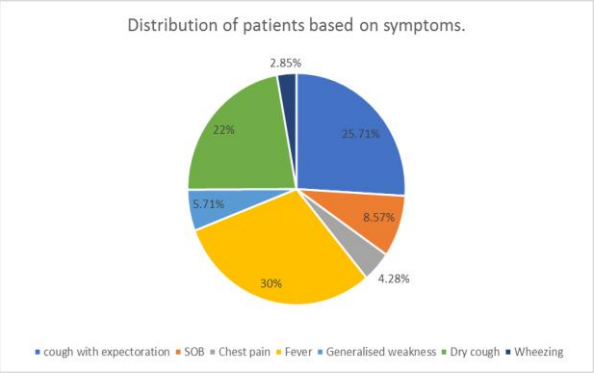

Figure 16: Distribution of patients based on symptoms.

DISCUSSION

- We have conducted a prospective observational Study on of Management & outcomes of Pneumonia.
- 70 patients were enrolled in the study out of which 42 were males & 28 were female.
- Patients age was categorized into 6 classes - 26-35, 36-45, 46-55, 56-65, 66-75 76-85.

- Out of 70 individuals, men were more likely to be infected with pneumonia than woman.
- Out of 70 patients, 42 (60%) were found to be males and 28(40%) were found to be females.
- Out of 70 patients 8 patients (11.42%) were under the age group of 26-35, 6 patients (8.57%) under 36-45, 16 patients (22.85%) were under 46-55, 8 patients (11.42%) under 56-65, 24 patients (34.28%) were under 66-75, 8 patients (11.42%) under 76-85.
- Out of 42 male patients, 2 patients were under the age group of 26-35, 6 patients under 36-45, 6 patients under 46-55, 6 patients under 56-65, 10 patients under 66-75, 8 patients under 76-85.
- Out of 28 female patients, 6 patients were under the age group of 26-35, 0 patients under 36-45, 10 patients under t 46-55, 2 patients under 56-65, 14 patients under 66-75, 0 patients under76-85.
- Out of 70 patients, 58 patients (82.85%) had comorbidities and 12 patients (17.14%) had no comorbidities.
- Out of 58 patients with comorbidities, 32 patients (55.17%) were found to be males and 26 patients (44.82%) were found to be females.
- Out of 42 male patients, 10 patients had no comorbidities, 2 patients were having Diabetes mellitus, 1 patient was having hypertension, 3 patients were having both Diabetes mellitus and hypertension, 9 patients were having asthma, 7 patients were having COPD, 8 patients were having bronchiectasis, 1 patient was having kidney disease, 1 patient was having other comorbidities.
- Out of 28 female patients, 2 patients had no comorbidities, 1 was having Diabetes mellitus, 1 have hypertension, 2 have both Diabetes and hypertension, 7 have asthma, 6 have COPD, 5 have bronchiectasis, 2 have kidney disease, 2 have other comorbidities.
- Out of 70 patients, symptoms were observed in 70 patients (100%) and 0 patients (0%) had no symptoms.
- Out of 70 patients, 18 patients (25.71%) were taking PIPTAZ, 17 patients (24.28%) were taking MAGNEX FORTE, 10 patients (14.28%) were taking DOXY, 7 patients (10%) were taking MONOCEF, 16 patients (22.85%) were taking AZEE, and 2 patients (2.85%) were taking other antibiotics.
- Out of 70 patients, 12 patients (60) were taking fluvir, 1 patient (5%) was taking ribavirin, 3 patients (15%) were taking acyclovir, 2 patients (10%) were taking amantadine, 2 patients (10%) were taking zanamivir.
- Out of 67 patients, 27 (40.29%) patients were taking Duolin, 23 (34.33%) patients were taking Budecort 8(11.95%) patients were taking ceftazidime & (10.44) patients were taking gentamicin, 2 (2.98%) patients were taking tobramycin.
- Out of the antibiotics used in pneumonia treatment Piptaz is showing 335 efficacy, magnexfote is showing 29% efficacy, doxycycline is showing 12% efficacy, monocef is showing 8% efficacy, azithromycin is showing 13% efficacy, other is showing 5% efficacy.
- Out of antiviral used in the treatment of pneumonia fluvir is showing 42% efficacy, ribavirin is showing 8% efficacy, acyclovir is showing 23% efficacy, amantadine is showing 21% efficacy, zanamivir is showing 6% efficacy.
- The most common type of pneumonia was observed to be bacterial (30%) and viral pneumonia (35%)
- The most common symptoms were found to be fever (31%), cough with expectoration (25%).

CONCLUSION

From our study done for a period of 6 months we accessed the management and outcomes of pneumonia.

Sample size was 70 patients among them 42 patients were males, and 28 patients were females.

Age group of patients were categorized into 6 classes, in which 46-55(22.85%) and 66-75 (34.28%) were having more No. of patients.

The most common type of pneumonia was observed to be bacterial pneumonia (30%) and viral pneumonia (35%)

And the most common symptoms were found to be fever (30%) cough with expectoration (25%)

The length of stay in hospital for many no. of patients with pneumonia was found to be more than 4 days.

The most commonly used medications in the treatment of pneumonia are:
Piptaz, Azee, Magnexfote, Fluvir, Acyclovir, Amantidine, Duolin, Budecort, Mucinac, Reswas, Hydrocortisone, Montek- Lc.

In most of the cases pneumonia has positive outcomes of complete recovery but in some cases due to patient non-adherence to medications it led to residual symptoms, recurrence, hospitalization.

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and Latin American guidelines, a panel of experts present recommendations about diagnosis, risk factor for antibiotic resistance and type and duration of treatment for HAP and VAP. PICO questions and GRADE methodology were used.

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