



International Journal of Preclinical & Pharmaceutical Research

Journal homepage: www.preclinicaljournal.com

A PROSPECTIVE STUDY ON PREVALENCE OF LOWER RESPIRATORY TRACT INFECTIONS IN A TERTIARY CARE TEACHING HOSPITAL

Safna KV ^{*1}, Savitha Sathesh Kumar¹, Shabna Mundrayil¹, Akash S Kumar¹
Dr Vini Pavithran¹, Dr Jesin Kumar²

¹Department of Pharmacy Practice, Grace College of Pharmacy, Palakkad, Kerala, India.

²Department of Pulmonology Medicine, Karuna Medical College, Palakkad, Kerala, India.

ABSTRACT

Background: Respiratory tract infection (RTI) is considered as one of the commonest public health problems dealt with in primary care. RTIs traditionally divided into upper respiratory tract infections (URTI) and lower respiratory tract infections (LRTI). LRTIs are frequent and include community acquired pneumonia (CAP), exacerbation of chronic bronchitis (ECB), acute bronchitis (AB) and viral lower respiratory tract infections (VRTI). The study was aimed to evaluate the prevalence of LRTI. Methodology: It was a prospective observational study which was conducted in patients in department of General medicine and department of Pulmonology at Karuna Medical College Hospital, Palakkad in the duration of October 2021 to March 2022(6 months).Result: A total of 98 LRTI patients were enrolled in the study. Male patients constitute the most number of cases than female. Age group between 60-69yrs are more prone to incidence of respiratory tract infections. Acute exacerbation of COPD was the most common type of respiratory infection involved with a total of 40.81%. Cephalosporins was the most commonly prescribed antibiotic under LRTI followed by fluoroquinolones.Conclusion: This study provides an insight on the prevalence of lower respiratory tract infections. The most commonly seen LRTI was acute exacerbation of COPD and the least was bronchiectasis. In our study the age group of 60-69 years are more prone to the disease than other age groups. On the basis of sex distribution, males are more prone to the infection than females and the most preferred choice of antibiotic was found to be cephalosporins.

Key Words: Lower respiratory tract infection, Prevalence.

INTRODUCTION

Respiratory tract infection (RTI) is considered as one of the commonest public health problems dealt with in primary care [1]. The world faces more than 2-5 million cases every year, with deaths ranging from 290,000 to 650,000. India hosts a population of 1.3 billion people, which stands second in reporting RTI with 31,341,507 number of cases, and 420,196 deaths [2].

RTIs traditionally divided into upper respiratory tract infections (URTI) and lower respiratory tract infections

(LRTI). LRTI is not a single disease but a group of specific infections with different epidemiologies, pathogenesis, clinical presentations and outcomes [3]. RTIs report for more restricted activity and loss of time from work than any other infection. Exposure of variable individuals to infectious agents, infectious dose and pathogen virulence drive difference in the frequency of respiratory infections [2].

LRTIs are frequent and include community acquired pneumonia (CAP), exacerbation of chronic bronchitis (ECB), acute bronchitis (AB) and viral lower respiratory tract infections (VRTI). LRTIs incidence increased with fluctuations over time, and it seems to be higher in men than women, and the risk of infection increases with age. Infections of LRTI are responsible for

Corresponding Author

Safna K V

Email: safnasanbag988@gmail.com

4.4 % of all hospital admissions and 6% of all general practitioner consultations [4].

Antibiotic use remains one of the most cost-effective health interventions in the fight against infectious diseases caused by bacteria. However, inappropriate antibiotics use may result in the emergence of resistant bacteria [5]. The widely used drugs for treatment of any respiratory tract infection are antibiotics. Despite the existence of well-established standards for guiding the prescription practice at health care facilities (HCF), several studies have indicated substantial overuse of common antibiotics across developing countries. The treatment with antibiotics is indicated only when the patient has symptoms sustained for at least 10-14 days without showing any improvement [6].

The prescribing pattern deals with monitoring, evaluating and suggesting modifications in the prescribing pattern, so as to make patient care safe and effective. Inappropriate use of antibiotics is a great public health concern because of its increased chances of development of antibiotics resistance in a community. Antimicrobial or antibiotic resistance (AMR) is an increasingly serious threat to global public health. Consequently, there is an emerging risk that standard antibiotic treatments no longer work making infections harder or impossible to control. Over the last 30 years no major new type of antibiotics have been developed [7]. The aim of our study was to evaluate the prevalence of LRTI in Karuna Medical College Hospital, Palakkad.

METHODOLOGY

A prospective study was conducted in Department of General Medicine and Department of Pulmonology of Karuna Medical College Hospital Chittur, Palakkad, Kerala. Patients with LRTI were enrolled in the study and written patient consent form was obtained prior to the

study. A total of 98 cases satisfying the inclusion criteria were taken from patients attending the General Medicine and ICU due to LRTI over a duration of 6 months. The study excluded patients with URTI, other infections, pulmonary malignancies and who are not willing to participate.

The study protocol was approved by Institutional Ethical Committee of Karuna Medical College.

Data related to patient's demographics, medical and medication history, diagnosis, current treatment, full antibiotics received, duration of antibiotics given to the patient and bacteriological investigation was documented in the patient proforma. Antibiotics prescribed empirically or after culture report was also documented. The collected data was analyzed for age, gender distribution, distribution of LRTI, and prescribed pattern of antibiotics.

RESULT

A prospective observational study was conducted over a period of 6 months at Karuna Medical College Hospital, Palakkad. During the study, 98 patients were enrolled with respiratory tract infections.

As seen in figure 1; out of 98 patients involved, the percentage of males (58.1%) was found to be more, when compared to females (41.8%). Therefore, males were found to be the predominant gender.

From Table 1; age group between 60-69 years (25.51%) are more prone to incidence of lower respiratory tract infections.

Table 2 depicts that; Acute exacerbation of COPD was the most common type of lower respiratory infection involved with a total of 40.81% cases and least was Bronchiectasis with 8.16%.

Figure 2; represents that cephalosporins (41.83%) was the most prescribed Antibiotic under LRTI followed by fluoroquinolones (31.63%).

Table 1. Age Distribution

S.NO	Age group in years	No. of patients with LRTI	Percentage
1	19-29	12	12.24
2	30-39	7	7.14
3	40-49	15	15.30
4	50-59	18	18.36
5	60-69	25	25.51
6	70-79	14	14.28
7	80-89	7	7.14

Table 2. Prevalence of various lower respiratory tract infections

S. No	TYPE OF INFECTION	NO: OF PATIENTS	PERCENTAGE
1	Acute bronchitis	16	16.32
2	Acute exacerbation of COPD	40	40.81
3	Pulmonary Tuberculosis	15	15.30
4	Pneumonia	21	21.42
5	Bronchiectasis	8	8.16

Fig 1. Gender Distribution

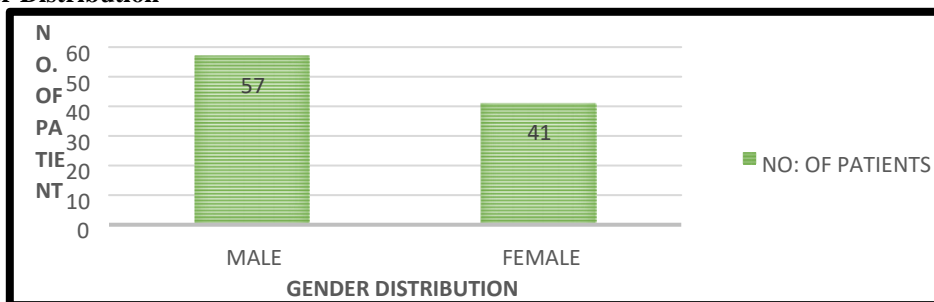
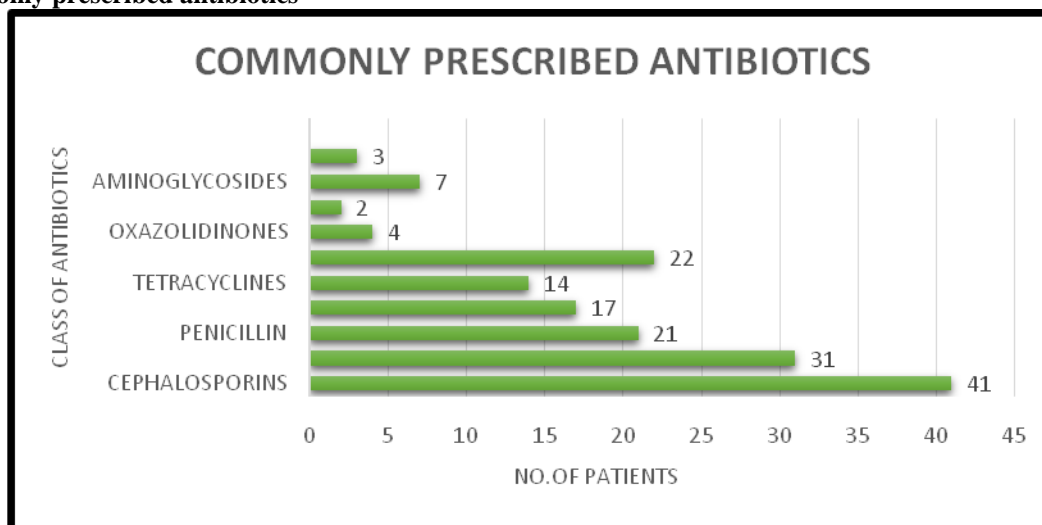


Fig 2. Commonly prescribed antibiotics



DISCUSSION

The aim of our study was to evaluate the prevalence of LRTI in Karuna Medical College and hospital, Palakkad. Out of total 98 prescriptions evaluated; the males were more prone to develop LRTI than females [figure. 1]. This matched with study done by Singh G *et al.*, that males were predominant than females. However, another study reported slightly more preponderance in females (50.9%) than males (49.1%) [8].

In this population based prospective study of the adults, majority of patients were above 60 years (25.51%) of age, and minimum number of patients were under the age group of 30-39 years and 80-89 years (7.14%). A similar study conducted by Saxena Set *al.*, found that the age distribution of patients showed that the age group of 61-75 years constituted 61.50% [9].

The most common LRTI for which the patient came to the hospital were found to be acute exacerbation of COPD by 40.81%. These findings are in accordance with previous study done by Elmaraghy A Aet *al.*, that 68% patients diagnosed to have chronic obstructive pulmonary disease from 50 prescriptions [10].

The etiological agents of LRTIs and their susceptibility patterns vary from area to area. Hospital

antibiograms are mandatory to guide empirical antimicrobial therapy and are an important component of detecting and monitoring trends in antimicrobial resistance [11]. Most preferred choice of antibiotic was found to be cephalosporins 41.83%, followed by fluoroquinolones 31.63%, macrolides 22.44%, penicillins 21.42%, beta-lactamase inhibitors 17.34%, tetracyclines 14.28%, oxazolidinones 4.08%, sulphonamides 3.06%, carbapenems 2.04%. This is in concordance with study done by Wood J *et al.*, where agents such as fluoroquinolones 2.1% and cephalosporins 6.6% were not widely used [12].

CONCLUSION

This study included a total of 98 participants. It provided an insight on the prevalence of lower respiratory tract infections. The most commonly seen LRTI was acute exacerbation of COPD and least was bronchiectasis. In our study the age group of 60-69 years is more prone to the disease than other age groups. On the basis of sex distribution, males are more prone to the infection than females and the most preferred choice of antibiotic was found to be cephalosporins.

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