ORIGINAL RESEARCH

Evaluation of Spectrum of Pulmonary Diseases Among Hospitalised Patients of the Respiratory Intensive Care Unit at a Tertiary Care Centre

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ABSTRACT

Introduction: Respiratory diseases are reportedly the major forefront runner in causing the morbidity and mortality globally thus imposing great global health burden. , the present study was undertaken to assess the spectrum of pulmonary disease affecting the persons admitted to respiratory intensive care unit.

Materials and Methodology: For the study purpose, 120 subjects with various respiratory illnesses who were admitted in RICU were included. A written informed consent was obtained from all the study participants after briefly explaining the study protocols to the study subjects. Complete demographic detail for each of the study participants that include past medical and surgical history, family history, as well as history of present illness. The statistical analysis of the data was done using SPSS version 11.0 for windows.

Results: The age of participating patients ranged between 32 to 72 years. The number of male subjects was 76 and number of female subjects was 44. The lowest number of patients were seen with Bronchiectasis (n=8). The results on comparing were found to be statistically non-significant. (p>0.05)

Conclusion: This study provided enough support to show that bronchial asthma, pulmonary tuberculosis, COPD are considered to the most common and frequent nosocomial infections among those patients admitted in RICU. But future research are needed to be carried forward the study in a nurturing manner for the betterment.

Keywords: Respiratory Distress, Intensive Care Unit, Pulmonary Diseases.

INTRODUCTION

Hospital acquired infections (Nosocomial) are reportedly observed to be frequent complications among those patients who were admitted in ICU as critically ill which might lead to increase to morbidity and mortality.[1] Most of the nosocomial infections are ultimately respiratory associated diseases which constitute to be the most important health burden across the world. Acute respiratory infections, pneumonia, tuberculosis, obstructive and restrictive lung diseases, pleural diseases, malignancies are common respiratory conditions for hospital admission. Chronic obstructive pulmonary disease (COPD), lower respiratory tract infections, lung cancer and tuberculosis have been greatly recognised as top four respiratory diseases among the top ranked ten leading aetiologies of death worldwide.[2] The forum of international

respiratory societies (FIRS) quantified that 65 million people have moderate to severe COPD which could possibly resulted in 3 million deaths per year, making it third leading cause of death globally.[3]Recently, a research estimated that asthma affects an estimated 335 million people globally and is calculated to increase up to 400 million by the year 2025.[4] In 2015, 10.4 million people across the globe reported to be developed TB with 1.4 million global deaths have been reported.[5]

Respiratory ICU patients are a heterogeneous group with severe illness, multiple system dysfunction, and multiple coexisting medical conditions.[6] Approximately one-third of the hospital mortalities occur in critically ill patients admitted in ICU[7]are responsible for 10–20% of worldwide hospital expenses. Therefore, an early identification of characteristics of critically ill patients that require RICU and their suspected outcomes variedly aids in the improvement of these outcomes and great reduction of their mortality rate globally.[8] Hence; based on the guidance of above obtained data, the present study was undertaken to assess the spectrum of pulmonary disease affecting the persons admitted to respiratory intensive care unit.

MATERIALS AND METHODOLOGY

After obtaining the ethical clearance from the institutional ethical committee, the study was commenced in the Department of Pulmonary Medicine, All India Institute of Medical Sciences, Bhopal, Madhya Pradesh, India. For the study purpose, 120 subjects with various respiratory illnesses who were admitted in RICU were included. A written informed consent was obtained from all the study participants after briefly explaining the study protocols to the study subjects. Complete demographic detail for each of the study participants that include past medical and surgical history, family history, as well as history of present illness. The statistical analysis of the data was done using SPSS version 11.0 for windows. Chi square and Student's t-test were used for checking the significance of the data. A p-value of 0.05 and lesser was defined to be statistically significant.

RESULTS

Table 1 shows demographic data of the participants. We observed that mean age of the participants was 52.21 years. The age of participating patients ranged between 32 to 72 years. The number of male subjects was 76 and number of female subjects was 44.

Table 2 displayed the distribution of patients based on the various diagnoses. All the study participants observed that highest number of patients had bronchial asthma (n=28), followed by chronic empyema (n=22), Pulmonary Tb (n=19), COPD (n=16), Pneumothorax (n=14), pneumonia (n=13). The lowest number of patients were seen with Bronchiectasis (n=8). The results on comparing were found to be statistically non-significant. ($p>0.05$)

Table 1: Demographic data of the participants

Parameters	Values
Mean age (years)	52.21
Age range (years)	32 – 72
Number of male subjects	76
Number of female subjects	44

Table - 2: Distribution of patients according to various diagnoses

Diagnosis	Number of patients	Percentage
Bronchial asthma	28	23.4%
Bronchiectasis	8	6.6%
Chronic empyema	22	18.4%
COPD	16	13.3%

Pneumonia	13	10.8%
Pneumothorax	14	11.7%
Pulmonary tuberculosis	19	15.8%
Total	120	100.0%

DISCUSSION

There are various agents that were documented which proved to be responsible for various respiratory illnesses. These agents include toxic agents, accidents, and harmful lifestyles, such as smoking, infections, genetic factors and anything else that affects lung development, either directly or indirectly. In this present study, it has been observed that bronchial asthma was the most frequent disease among the patients admitted to RICU. Following bronchial asthma, there were other diseases include chronic empyema, pulmonary tuberculosis, COPD and pneumothorax were also common in those RICU patients. The results on comparison were found to be statistically non-significant.

Astudy conducted byVolakli E et al based-on impact of respiratory tract and abdominal sites of infection on affecting the major organs resulting in their failure. This SOAP study was a cohort, multicentre, observational study that included data from all the adult patients who were admitted to the intensive care units (ICUs) from 24 European countries during the study period. In this study, study participants were divided into two groups based on whether at the time of admission, they had abdominal infection but no respiratory infection or respiratory infection but no abdominal infection. The two groups were compared with each other in relation to patient and infection-related characteristics, organ failure patterns and its clinical outcomes. From the SOAP database, there were 3,147 patients examined, 777 (25%) patients had sepsis on ICU admission; 162 (21%) had abdominal infection without concurrent respiratory infection and 380 (49%) had respiratory infection without concurrent abdominal infection. Comparing the age, sex, and severity scores parameters were identical in both the two groups. On the contrary, early neurological failure was seemed to be observed in patients with respiratory infection. The median length of ICU stay was reported to be almost the same between both the groups, but the median length of hospital stay was longer in patients with abdominal than in those with respiratory infection. They concluded that there are few major differences in patient profiles in respect to the site of infection but mortality rates in these two groups of patients are identical.[11]

Based on the research organised by*Nabeel* MS et al which was on the clinical characteristics, weaning pattern and outcome of patients who are in need of prolonged mechanical ventilation in AICU settings in a resource-limited country proposed that during the course of one-year period, 49 patients with a mean age of 49.7 years had prolonged ventilation; 63% were male, and 84% had a medical illness. The median APACHE II and SOFA scores on admission were 17 and 9. The median number of ventilation days was 37. The most common reason for commencing ventilation was respiratory failure secondary to sepsis (67%). Weaning has been successfully initiated in 39 (79.5%) patients, with success in 34 (87%). The median weaning duration was 14 (9.5 - 19) days, and the median length of intensive care unit stay was 39 (32 - 58.5) days. The duration of vasopressor support and the importance for haemodialysis were significant independent predictors in determining the unsuccessful ventilator liberation. And after 12-months follow-up, 65% had survived.[12]

SaydainG et al conducted a retrospective study in elaborating the clinical course of 38 patients with idiopathic pulmonary fibrosis (IPF) who were admitted to the intensive care unit (ICU). There were 25 males and 13 females who were the mean age of 68.3 ± 11.5 years. Twenty patients were put under corticosteroids at the time of admission to the hospitalwhereas 24 had been on home oxygen therapy. The most common reason for ICU admission among them was observed to be respiratory failure. The Acute Physiology and

Chronic Health Evaluation III–predicted ICU and hospital mortality rates were 12% and 26%, whereas the actual ICU and hospital mortality rates were 45% and 61%. They did not notice any significant differences in pulmonary function or echocardiogram findings between survivors and non-survivors.[13]

CONCLUSION

To conclude, this study provided enough support to show that bronchial asthma, pulmonary tuberculosis, COPD are considered to the most common and frequent nosocomial infections among those patients admitted in RICU. But future research are needed to be carried forward the study in a nurturing manner for the betterment.

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