Original research article

Spectrum Of Pulmonary Disease Affecting The Persons Admitted To Respiratory Intensive Care Unit

Dr. Ravindran V
Assistant professor, Department of Pulmonary Medicine, Yenepoya Medical College, Karnataka, Inda

Corresponding Author:
Dr. Ravindran V

Abstract

Background: Patients with potentially recoverable conditions, who can benefit from more detailed observation and invasive treatment that can be provided safely in a high dependency area, are candidates for intensive care, which can be broadly defined as a service for these patients. Intensive care is typically provided in a high dependency area. Patients in the respiratory intensive care unit are a diverse population who all have severe illnesses, malfunction in numerous body systems, and multiple concurrent medical conditions.
Keywords: Pulmonary ICU, asthma, COPD, pneumonia

Introduction

Patients with potentially recoverable conditions, who can benefit from more detailed observation and invasive treatment that can be provided safely in a high dependency area, are candidates for intensive care, which can be broadly defined as a service for these patients. Intensive care is typically provided in a high dependency area. The greatest level of ongoing medical care and therapy for patients is referred to as intensive care [1-3]. Patients in the respiratory intensive care unit are a diverse population who all have severe illnesses, malfunction in numerous body systems, and multiple concurrent medical conditions [4]. Critically sick patients in the intensive care unit account for around one third of all hospital deaths [5] and are the cause of ten to twenty percent of all hospital expenses worldwide. Early identification of the features of critically sick patients who require RICU care as well as their suspected outcomes is helpful in improving these outcomes and reducing the death rate of critically ill patients [6]. As a result, the current study was carried out with the intention of investigating the spectrum of pulmonary diseases that impact the patients who are hospitalized to the respiratory intensive care unit.

Materials and methods

The present investigation was carried out by researchers from the Pulmonary Medicine Department of the Medical Institute. Before beginning the investigation, the ethical board of the institute gave its stamp of approval to the project, ensuring that it would not violate any ethical standards. A total of one hundred and fourteen patients who had been admitted to the pulmonary intensive care unit and were diagnosed with one of several respiratory disorders were chosen for the study. Following a verbal explanation of the study protocol to all of the participants, a signed informed permission was collected from each

participant. We gathered each patient's full set of demographic information, which included their past medical history, their past surgical history, their family history, their social background, and their history of their current disease.

Results

Table 1: Demographic data of the participants

Variables	Values
Mean age (years)	51.65
Age range (years)	30-70
Number of male subjects	66
Number of female subjects	34

Table 2: Shows distribution of patients according to various diagnosis

Diagnosis	No. of patients	Percentage
Bronchial Asthma	40	40
Bronchiectasis	7	7
Chronic Empyema	2	2
COPD	36	36
Pneumonia	11	11
Pneumothorax	2	2
Pulmonary Tb	16	16
ILD	2	2
Total	100	114

Discussion

In the current research, we found that bronchial asthma was the condition that was most prevalent among patients who were hospitalized to the pulmonary intensive care unit. Patients who were admitted to the pulmonary ICU also frequently presented with chronic empyema, pulmonary tuberculosis, COPD, and pneumothorax. It was determined that there was no statistically significant difference between the two sets of results. The findings were analyzed and compared to those of other research that have been published, and they were found to be consistent. Researchers under the name of Volakli E. *et al*. looked at the differences between the effects of an infection in the respiratory tract and an infection in the abdomen on organ failure and survival. The SOAP project was a cohort, multicenter, observational study that comprised data from all adult patients admitted to one of 198 participating intensive care units (ICUs) from 24 European nations during the study period. The ICUs were spread across 24 different countries. Patients were included in this substudy and were assigned to one of two groups based on whether or not they presented with an infection in the abdominal cavity but not in the respiratory system when they were admitted or whether or not they presented with an infection in the respiratory system but not in the abdominal cavity. Comparative analyses were performed on the two groups with regard to patient and infection-related variables, patterns of organ failure, and outcomes. 777 (25%) of the 3,147 patients in the SOAP database were admitted to the ICU with sepsis; 162 (21%) of these patients had an abdominal infection without a contemporaneous respiratory infection, and 380 (49%) of these patients had a respiratory infection without a concurrent abdominal infection. Both groups had comparable ages, sexes, and severity levels across the board. Patients who presented with an abdominal infection were more

likely to have septic shock upon admission. These patients also had a higher risk of presenting with early coagulation failure and acute renal failure. Patients who were suffering from respiratory infections, on the other hand, had an increased risk of early neurological failure. The median duration of stay in the intensive care unit was same across the two groups; however, the median length of stay in the hospital was much longer for patients who had stomach infection as opposed to respiratory infection. Both intensive care unit (ICU) (29%) and hospital (38%) mortality rates were the same in both groups. They came to the conclusion that there are significant changes in patient profiles connected to the location of the infection; despite this, the rates of mortality in both of these groups of patients are the same. Due to the limited amount of data available, Mohan CK and colleagues decided to study the factors that can help predict death in patients who have respiratory infections. Between the months of August 2017 and February 2018, a prospective observational study was carried out at a tertiary care centre. Participants in the trial were intensive care unit patients who had been diagnosed with severe respiratory infection. The patient's age, gender, diagnosis, and the primary reason for their admittance to the intensive care unit were all documented as pieces of data. In addition to this, we discovered the presence of co-morbidities. The scores for the modified CPI were determined on days 1 and 2. In order to evaluate the factors that are linked with mortality, a Cox regression univariate and multivariate analysis in addition to a Kaplan Meier analysis were carried out. 303 patients who met the inclusion criteria were given the opportunity to participate in the trial. The average age of the group was 56.05 years with a standard deviation of 16.37 years, and males made up 62% of the total. Pneumonia was the most prevalent diagnosis, accounting for 66% of cases, followed by COPD, which accounted for 43.5% of cases. The average number of days spent in the hospital was 7.29 with a standard deviation of 3.76. The rate of mortality was 17.8 percent. According to the findings of a multivariate Cox regression analysis, a CPI score of more than 4 on day 1, a CPI score of more than 6 on day 2, and the administration of more than 2 antibiotics were each individually related with an elevated risk of mortality. They came to the conclusion that a modified CPI score of more than four on day one, a modified CPI score of more than six on day two, and the use of more than two antibiotics were independently associated with an increased risk of mortality in patients who were admitted to the ICU with a respiratory infection [7, 8].

A retrospective study was performed by Saydain G *et al.*, which described the clinical course of idiopathic pulmonary fibrosis (IPF) in 38 patients who were brought to the intensive care unit (ICU). There were a total of 32 people consisting of 25 males and 13 females with a mean age of 68.3 years and a standard deviation of 11.5 years. At the time of their admittance to the hospital, twenty patients were receiving corticosteroids, and 24 patients had been receiving oxygen therapy at home. The most typical cause of admission to the intensive care unit was respiratory failure. The Acute Physiology and Chronic Health Evaluation III predicted that the mortality rates in intensive care units and hospitals would be 12% and 26%, respectively. However, the actual mortality rates in intensive care units and hospitals were 45% and 61%, respectively. In terms of pulmonary function and the findings of echocardiograms, the researchers did not uncover any significant differences between those who survived and those who did not. In 19 patients, or fifty percent of the total, mechanical ventilation was used. Nine of the patients ended up developing sepsis. 14% of those who survived the ordeal experienced multiple organ failure, whereas 43% of those who did not survive did so. Ninety-two percent of those who survived their time in the hospital passed within a median of two months after being released. According to these data, patients with IPF who are admitted to the intensive care unit have a dismal prognosis both in the short term and the long term. When deciding whether or not to continue with life support and receive care in the intensive care unit, patients who have IPF and their families should be educated about the overall prognosis.

Ghoneim AH *et al*. investigated the admission pattern of patients to the Respiratory Intensive Care Unit (RICU) at Zagazig University Hospitals, Egypt, and analyzed the results of their treatment. All patients who were brought into the RICU from March 2010 to October 2010 inclusive. There were a total of 200 patients, with the ages ranging anywhere from 11 to 86 years, with 126 males (63%) and 74 females (37%). They were divided into two categories based on the reasons for their admission to the RICU: primary respiratory causes (which accounted for 162 of the cases, or 81%), and secondary respiratory causes (which accounted for 38 of the cases, or 19% of the total). At the time of admission, the following were performed on each patient: a complete medical history, a chest examination, an evaluation of the Glasgow Coma Scale (GCS) and the Acute Physiology and Chronic Health Evaluation II (APHCHE II) score, an analysis of arterial blood gases, a plain chest and heart X-ray, a computerised tomography (CT) study, electrocardiography (ECG) or echocardiography (ECHO) study when necessary, and an evaluation of the outcome During the course of the study, a total of 200 patients were hospitalised, of which 57% were referred by chest physicians, 14% came from other hospitals, 13% came from other departments, and the remaining patients came from the chest ward and the emergency room (ER). The mean GCS score was 12.7 with a standard deviation of 3.97, while the mean APHACHE II score was 14.4 with a standard deviation of 6.5. The total amount of time spent in the RICU ranged from 7.2 to 7.4 days. According to the findings of the investigation into the cases, thirty-five percent of the patients were sent to the chest ward, thirty-five percent of the patients passed away, and twenty-four percent of the patients were sent home. There was a significant difference in the outcomes of cases that were determined to have primary (1ry) or secondary (2ry) respiratory causes, with the mortality rate being 26.6% among cases that were determined to have 1ry respiratory causes and 60.4% among cases that were determined to have 2ry respiratory causes. The outcome in terms of the source of admission revealed that the highest percentage of fatalities occurred among cases that were referred from chest wards and non-chest physicians, respectively (63.7% and 62.5%). There was a statistically significant link between the outcome and the length of time spent there. In terms of the results of employing mechanical ventilation, the death rate in patients who were given mechanical ventilation was 52.05%, whereas the mortality rate in those who did not receive mechanical ventilation was 47.5%. According to the findings of this study, the patients who were transferred to the RICU more quickly had a better prognosis than those who were transferred later, particularly those who were transferred by chest physicians and patients with 1ryrespiratory diseases rather than those with 2ryrespiratory diseases. Those patients who had a high Glasgow Coma Scale and a low APACH II score, as well as those who had a short duration of stay in the RICU, particularly those who did not require the assistance of mechanical ventilation, had a favourable prognosis. Therefore, taking into account those characteristics in clinical practise might result in a better outcome when dealing with patients in the RICU [9, 10].

Conclusion
Within the confines of the present study, it is possible to draw the conclusion that bronchial asthma, chronic empyema, pulmonary tuberculosis, COPD, and pneumothorax are the diseases that are most prevalent among pulmonary patients who have been admitted.

References
1. Bolaji BO, Kolawole IK. The Intensive Care Unit of the University Teaching Hospital, Ilorin, Nigeria: a ten year review (1991-2001) S. Afr. J Anesth. Analg, 2005, 146-150.
2. David A. Gruenberg, Wayne Shelton Influencing length of stay in the ICU Am. J Crit. Care. 2006;15:502-509.

3. Afessa B1, Morales IJ, Scanlon PD, Peters SG. Prognostic factors, clinical course, and hospital outcome of patients with chronic obstructive pulmonary disease admitted to an intensive care unit for acute respiratory failure. Crit Care Med. 2002;30(7):1610-5.
4. Ghoneim A, Hussein R, El-Ghamry R, Mahmoud L. Patterns of admitted cases to Respiratory Intensive Care Unit at Zagazig University Hospitals, Egypt. EJCT. 2013;62:661-668.
5. Friedrichs J, Wilson G, Chant C. Long-term outcomes and clinical predictors of hospital mortality in very long stay intensive care unit patients. Crit Care. 2006;10:R59.
6. Moreno R, Agthe D. ICU discharge decision-making: are we able to decrease post-ICU mortality? Intensive Care Med. 1999; 25:1035-1036.
7. Volakli E, Spies C, Michalopoulos A, Groeneveld AB, Sakr Y, Vincent JL. Infections of respiratory or abdominal origin in ICU patients: what are the differences? Crit Care. 2010; 14(2):R32. doi:10.1186/cc8909
8. Mohan CK, Mahandra M. Predictors of mortality in patients with respiratory infection admitted to ICU in a tertiary care centre. J Pulmon. 2019;3(1):4-7.
9. Saydain G, Islam A, Afessa B, Ryu JH, Scott JP, Peters SG. Outcome of Patients with Idiopathic Pulmonary Fibrosis Admitted to the Intensive Care Unit. American Journal of Respiratory and Critical Care Medicine, Volume 166, Issue 6.
10. Ghoneim AH, Hussein RM, Lamia RG, Mahmoud Y. Patterns of admitted cases to Respiratory Intensive Care Unit at Zagazig University Hospitals, Egypt. Egyptian Journal of Chest Diseases and Tuberculosis. 2013; 62(4):661-668.