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Original Research Paper

Respiratory Medicine

TO STUDY THE CLINICAL EFFECTIVENESS OF PULSE THERAPY STEROID WITH ROUTINE STEROID THERAPY IN PATIENTS WITH SEVERE BILATERAL PNEUMONIA AND RESPIRATORY FAILURE ON NONINVASIVEVENTILATORY SUPPORT

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ABSTRACT

Acute respiratory tract infection (ARTI) of the lungs, often known as pneumonia. Pneumonia causes the alveoli in a person's lungs to swell with pus and fluid, making it difficult to breathe and decreasing oxygen intake. Pneumonia can be caused by a wide variety of factors, although bacteria and viruses are usually to blame. Patients with bilateral pneumonia and respiratory failure on non-invasive ventilatory support will participate in a comparison of the clinical efficacy of pulse therapy steroid medication to normal steroid therapy. The initial information will be gathered with the use of a proforma that has already been set up. All patients will have a comprehensive clinical examination and biochemical tests in accordance with the procedure. This study examines five objectives: to explore the profile and biochemical parameters of individuals with bilateral pneumonia; to measure morbidity and mortality, and to improve oxygenation. This study is conducted on non-invasive ventilator-supported "Sri Aurobindo Institute of Medical Sciences & Postgraduate Institute (Indore, M.P.)" cases of respiratory failure at the Department of Respiratory Medicine (SAIMS). Based on their age and gender, the patients assess the data and divide it into two groups (Group 1 & Group2). The design of the investigation is based on an observational study. The present study will be a prospective, 18-month-long investigation including 100 patients with proven respiratory failure. The study found that between the ages of 25 and 30, between 3 (6%) and 11 (22%) of patients in groups 1 and 2 were typically diagnosed. Also, among those between the ages of 51 and 60, 17 patients, or 34%, belonged to group 1, in contrast to the modest number of 11 patients, or 22%, who belonged to group 2. Unlike the majority of patients identified with bilateral pneumonia in group 1 (21, 42%), the majority of patients diagnosed with bilateral pneumonia in group 2 (33, 66%) were male. Males made up 29 percent of the 58 percent of patients diagnosed with bilateral pneumonia in group 1.while 17 out of 34 percent of patients diagnosed with bilateral pneumonia of group 2 were female. The final conclusion found that, according to age and gender, the data is not statistically significant.

KEYWORDS :

INTRODUCTION

Pneumonia has occurred as a disease ever since human history began. Clinically and radiographically, pneumonia presents as consolidation of a section of one or both lungs. There are numerous viral and non-infectious factors that can induce this acute inflammation of the lung parenchyma. Pneumonia is a major health problem that has devastating effects all around the world.,accounting for 10% of all adult and pediatric hospitalizations.Clinical symptoms of pneumonia include a rapid onset of Fever and chills, coughing up purulent sputum, wheezing, and pleuritic chest pain.Headaches, muscle aches, weariness, a sore throat, sickness, and diarrhea are all extrapulmonary symptoms that often accompany respiratory illnesses.

Specialist labs in several nations can perform the necessary diagnostic tests. Using"reverse transcriptase-polymerase chain reaction" would allow for the most rapid and accurate diagnosis of influenza (RT-PCR).

It is recommended to collect swabs from the back of the throat, the nasal cavities, or both, and any other samples that can be taken from the upper respiratory system. Relatively new evidence confirms the presence of the pandemic (H1N1) virus in tracheal and bronchial aspirates from patients exhibiting respiratory distress. Respiratory Failure is one of the complications of the disease process, which needs aggressive Treatment with noninvasive oxygen therapy, or invasive ventilation, depending on the severity of the sickness, and if left untreated, might result in the patient's death.

This study attempts "to study the clinical effectiveness of pulse therapy steroid with routine steroid therapy in patients with severe bilateral pneumonia and type i respiratory failure on non invasiveventilatory support".This study aims to learn more about the biochemical parameters, risk factor associations, and outcomes of individuals with bilateral pneumonia and type 1 respiratory failure. When comparing noninvasive ventilation with oxygen therapy for individuals with bilateral pneumonia, the available evidence is lacking. and type 1 respiratory failure.

Aims &objectives Of The Study

Aim:

To study the clinical effectiveness of pulse therapy steroid with routine steroid therapy in patients with severe bilateral pneumonia and respiratory Failure on noninvasiveventilatory support.

OBJECTIVES:

1. To study the demographics of patients suffering from severe bilateral pneumonia.
2. To assess the biochemical parameters of patients receiving pulse steroid therapy and routine steroid therapy with severe bilateral pneumonia.
3. To assess morbidity and mortality status of patients receiving pulse steroid therapy and routine steroid therapy with severe bilateral pneumonia.
4. To assess the effect of pulse steroid therapy and routine steroid therapy on Early weaning in patients with severe bilateral pneumonia.

5. To assess improvement in oxygenation(spo2) of patients receiving pulse steroid therapy and routine steroid therapy with severe bilateral pneumonia.

MATERIALS AND METHODS

Research Deisgn

The study that is being conducted for this research is an observational study.

Study Plan

The study is being carried out by the division of the hospital that specializes in pulmonary medicine (SAIMS). At the "Sri Aurobindo Institute of Medical Sciences and Postgraduate Institute in Indore, Madhya Pradesh", patients who had been diagnosed with respiratory failure and who were being supported by non-invasive ventilators were included in this study.

Subjects

The patients clinically diagnosed as respiratory failure due to pneumonia will be included in the study. The patients admitted in respiratory IPD in the Department of Respiratory Medicine.

Duration Of The Study

The duration of the present study was of 18 months from 1st April 2021 to 30th September 2022.

Sampling

One month will be dedicated to conducting the pilot study to see how many patients are eligible for participation.Patients who have been clinically diagnosed as having respiratory failure as a result of pneumonia will receive particular attention during the course of the pilot study. One hundred different patients were chosen to participate in this study's sample. According to the documentation that was maintained by MRD, there were around 30 patients in a single month who were given a clinical diagnosis of respiratory failure as a result of pneumonia. In order to conduct this study, patients who have been identified as suffering from pneumonia are divided into two distinct groups.

- Group 1: Patient taking pulse therapy steroid for 3 days then routine dose till day 7.
- Group 2: Patient taking routine dose steroid till day7.

Inclusion Criteria

- Patients above 18 years of age.
- Patient with diagnosed case of respiratory failure on non invasive ventilator support.
- Patient willing to participate in study.

Exclusion Criteria

- All known cases of cancer patients are excluded from my study.
- All diagnosed cases of CCF

Statisticcal Methods

The computations and analyses of the frequency responses were carried out with the assistance of the raw data from a total of one hundred different people. The current investigation will consist of a prospective study that will last for a total of eighteen months and will include a total participant pool of one hundred persons. One hundred people who have previously been diagnosed with respiratory failure will take part in the investigation. The use of descriptive statistics will be carried out so that the qualities and features of the samples that have been gathered can be characterized and identified.

- The data will be represented by using both the Mean and the Percentage.
- To prove that a connection exists, we'll utilize the Chi-square test.
- If the data are judged to be normal, a Student's t-test will be performed on the continuous quantitative parameters.
- If the value of P is less than 0.05, we will consider the data to be statistically significant.
- We will be preparing the master charts with the help of Microsoft Excel.

Critical Values And Notations

This section discusses the notations that are used to indicate the relevance of the observed probability value for a set of parameters.

- Insignificant/Not Significant (p value: $p>0.05$)
- Suggestively/Poorly Significant (p value: $p<0.08$ to $p<0.06$)
- Moderately Significant/Significant (p value: $p<0.05$ to $p<0.02$)
- Highly/Strongly significant (p value: $0.01<p<0.001$)

RESULT AND DISCUSSION

The age distributions of patients who were evaluated and diagnosed with bilateral pneumonia are shown in table 4.1. These patients belong to groups 1 and 2. However, there were proportional variations detected in the age distribution of patients who were studied who were in group 1, as compared to patients who were in group 2.According to the findings of the study, 3 (6%) of the patients in group 1 and 11 (22%) of the patients in group 2 were between the ages of 25 and 30.

In addition to this, it was observed that the age group of 31-50 years and above 60 years comprised a total of 10 (20%) patients who belonged to group 1. In contrast to the age group of 31-40 years, which comprised 11 (22%) of 31-40 years patients, the age group of 41-50 years, which comprised 15 (30%) patients, and 2 (4%) of above 60 years who belonged to group 2.

It was also found that 17 patients, or 34%, belonged to group 1 among those who were between the ages of 51 and 60, in contrast to the small number of 11 patients, or 22%, who belonged to group 2.

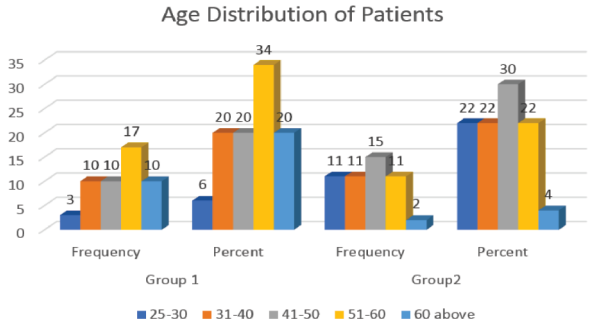

Figure 4.1: Age Distribution of Patients

Table 4.2 makes it simple to examine the gender breakdown of patients who were studied and who were diagnosed with bilateral pneumonia of either group 1 or group 2.Contrary to the majority of patients who were diagnosed with bilateral pneumonia in group 1, the majority of patients in group 2 (33, 66%) were found to be more frequently male. diagnosed with bilateral pneumonia of group 1 (21, 42%) who were found to be more frequently female.Patients diagnosed with bilateral pneumonia of group 1 were found to be male 29 out of 58 percent of the time, while patients diagnosed with bilateral pneumonia of group 2 were found to be female 17 (34 percent) of the time.

The accompanying table details the opinions of respondents on diabetes. In group 1, 10 patients between the ages of 31 and 50 had the highest incidence of diabetes mellitus, whereas 10 patients older than 60 have diabetes mellitus.In group 2, 11 patients aged 41-50 years have no diabetes mellitus, while 11 patients aged 51-60 years have diabetes mellitus.

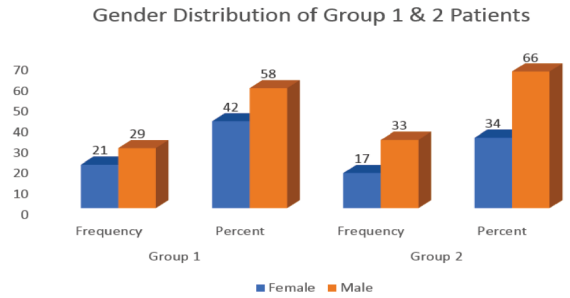

Figure 4.2: Gender Distribution of Group 1 & 2 Patients

There is a statistically significant split in the population with regard to diabetes and hypertension. It's interesting to see that Day 3 has some effect on Heart Rate, whereas Days 1 and 7 show none at all. This temperature trend has shown no noticeable effect or departure on Day 1, Day 3, or Day 7 so far. On days 3 and 7, the use of this drug had no impact on the respiratory rate, the FIO2 rate, or the CXR. The PAO2 report has a significant impact on days 1 and 7, but on day 2, it either has no effect or a significantly different impact. When SGPT is utilized in conjunction with creatinine, there is no change that can be considered statistically significant between days 1, 3, and 7. Between day 3 and day 7 of the MMRC, The grading distribution did not significantly shift statistically. There was no statistically significant difference between the two groups regarding the efficacy on TLC on days 1, 3, and 7. At the end of day 3, neither the CRP report nor the D-Dimmer report has had any effect on the patients. On day 3, patients in Groups 1 and 2 experienced a significant amount of influence, whereas patients in Group 1 experienced no effect on day 1. All things considered, the study's findings are consistent with the idea that the aforementioned methods are ineffective.

Table 4.45:Outcome Day 3 * Age

Groups	OUTCOME				
Group 1	Age	death	survive	Total	P value
	25-30	0	3	3	19.392*
	31-40	8	2	10	P= 0.001
	41-50	0	10	10	
	51-60	3	14	17	
	60 above	3	7	10	
	Total	14	36	50	
Group 2	Less than 30	0	2	11	15.173*
	31-40	9	2	11	P=0.004
	41-50	1	10	15	
	51-60	4	11	11	
	60 above	4	7	2	
	Total	18	32	50	

The above both table shows the Outcome report on Day 3. The 31-40 age of only 8 patients and 9 patients of both groups consider death outcome report. The 51-60 age of 14 patients and 11 patients of same age group of group 1 & 2 consider survive outcome report. Thus, it is clear from the above table that, on comparing both groups, the highest 51-60 age of patients from group 1, consider Survive Outcome report on day 3.

In group 1 the chi square value (19.392*) and sig value is 0.001 and in group 2 the chi square value is 15.173* & sig value is 0.004. In this case, the sig value of both groups is less than significance level (0.05) in both group, so the null hypothesis will be rejected and there is statistically significant difference among groups.

CONCLUSION

The Study's findings reveal its ultimate conclusion. Separate analyses are conducted for each age group and gender. Age and gender are two of the most important distinguishing characteristics, although there are many others, including Diabetes Mellitus, Hypertension, Heart Rate, Temperature, Respiration Rate, FIO2, PAO2, Creatinine, MMRC Grading, TLC, GCS, CXR, SGPT, CRP, D-Dimmer) Day (1, 3, 7) Covid-19 Day 1, Outcome Day 3. There is a statistically significant split in the population with regard to diabetes and hypertension.All things considered, the study's findings are consistent with the idea that the aforementioned methods are ineffective.

List Of Abbreviations

NIV -Non Invasive Ventilation,OT -Oxygen Therapy,CAP-Community Acquired Pneumonia,CBC- Complete Blood Count,ABG -Arterial Blood Gas,SGOT-Serum Glutamic-Oxaloacetic Transaminase,SGPT-Serum Glutamic-Pyruvic Transaminase,LFT -Liver Function Test,RFT -Renal Function Test,URTI -Upper Respiratory Tract Infection,LRTI -Lower Respiratory Tract Infection,Po2-Partial Pressure of Oxygen,Pco2 -Partial Pressure of Carbon Dioxide,Hco3-Bicarbonate ,WBC-White Blood Cells,CXR -Chest X Ray,LAMA -Left Against Medical Advice,DM -Diabetes Mellitus.

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