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Infants and children hospitalized with acute lower respiratory infections: A prevalence study of hypoxemia

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Abstract

Background: Acute respiratory tract infections are the leading preventable cause of disease and death around the world. Most of the deaths happen to children under five in developing countries.

Materials and Methods: This study took place in the children's hospital at the Department of Paediatrics, Asram Academy of Medical Sciences, Eluru, Andhra Pradesh, India. From May 2018 to April 2019, the study was done. Following the appropriate inclusion and exclusion criteria, a total of 100 children were asked to take part in this study.

Results: An important goal of this study was to find out how common hypoxemia is in kids who have an acute lower respiratory infection. One hundred teens with acute lower respiratory disease who were admitted at the institute were used in this study. The study found a ratio of 1.61 men to women, which means that most of the people who participated were guys. It was found that 52.5% of the children were younger than 12 months, and 47.5% were older than 12 months. People of all ages got coughs, colds, and pneumonia about the same amount of time. However, babies were more likely than older people to get serious and very severe pneumonia.

Conclusions: Hypoxemia was strongly linked to stuffy nose, shortness of breath, tachypnea, and not being able to eat or drink.

Keywords: Frequency, children, acute lower respiratory infection, hypoxemia

Introduction

Acute lower respiratory tract infections are a major cause of death that can be prevented and are responsible for about one-third of all juvenile deaths. Based on basic clinical signs, treatment plans for respiratory infections have been made and approved. Only one study has been done on the prevalence and clinical prediction of hypoxaemia in developing regions [1-3]. However, many studies on acute lower respiratory tract infections in these regions have shown that clinical signs can be used to help doctors make diagnoses or guide radiography, as well as to predict death [2-4].

Even though the new criteria for oxygen therapy haven't been tested in the real world, it is still suggested that children in the hospital with severe pneumonia get it. As far as we know, there have been no cases of hypoxemia in children from poor countries who had acute lower respiratory tract infections [3-5]. The World Health Organization says that pneumonia kills about two million children every year, which is about twenty percent of all children under five years old who die. In this group of people, this is the main cause of death [4-6].

Hypoxaemia is a common and dangerous side effect that happens to kids who are very sick. Hypoxemia can be caused by a number of different diseases, especially in newborns. However, most babies who are severely ill and have hypoxemia show signs of pneumonia. Hypoxemia is a major cause of death in people with pneumonia, so many studies have looked into the clinical signs of this condition in these patients [5-7]. We don't know much about the clinical signs of hypoxaemia in sick children when these two common diseases come together, especially when there is malnutrition. This is important to note because diarrhea and asthma often happen together. Together, they cause 33% of all deaths in children under five years old around the world [6-8].

How long and how bad the hypoxemia is are very important because early diagnosis and treatment improve results for these kids. Any teen who is seriously sick should be checked for hypoxemia right away so that oxygen treatment can begin [7-9]. An arterial blood gas test is the most accurate way to find hypoxemia, but it is expensive and hard to get in places with few resources.

To find hypoxemia more easily and with more confidence, pulse oximetry is a better option. The pulse oximeter is easier to get to, easier to carry, and doesn't hurt you. As a result, some people think of the pulse oximeter measure as the fifth vital sign [8-10]. The goal of this study was to find out how common hypoxemia is in kids who have a severe lower respiratory infection.

Materials and Methods

The research was conducted in the children's hospital of the Department of Paediatrics, Asram Academy of Medical Sciences, Eluru, Andhra Pradesh, India. The study was conducted from May 2018 to April 2019. In accordance with the established inclusion and exclusion criteria, a total of 100 youngsters were solicited to participate in this study.

Inclusion Criteria

- Children having trouble breathing and coughing
- Youngsters from two months to five years old

Exclusion Criteria

- Children with congenital heart disease,
- Severe anemia,

- Severe malnutrition
- Bronchial asthma

Results

Complete background checks were conducted on all individuals selected to participate in the study. The results of a comprehensive clinical evaluation were recorded on a pre-existing proforma. The amount of oxygen in the blood was monitored by a pulse oximeter with a monitor during the test. Hypoxia occurred when a child's oxygen saturation level fell below 90%. Assuming it exceeded 90%, hypoxia was not a problem.

Table 1: Distribution of research participants by age and gender

Sr. No.	Age Group	Male	Females	Total
1	2-12 months	30	20	50
2	12-60 months	40	10	50
3.	Total	70	30	100

With a ratio of 1.61 men to women, Table 1 showed that most of the 100 people who took part in the study were men. It was found that 52.5% of the children were younger than 12 months, and 47.5% were older than 12 months.

Table 2: Severity range different age groups with acute lower respiratory infections

Sr. No.	Age Group	Cough and cold	Pneumonia	Severe Pneumonia	Very Severe Pneumonia	Total
1	2-12 months	18	31	2	1	52
2	13-60 months	22	19	4	3	48
3.	Total	40	50	6	4	100

According to Table 2, the rates of cough, cold, and pneumonia were about the same for both age groups. However, babies were more likely than older people to get severe or very severe pneumonia.

Table 3: Study children's hypoxemia prevalence by diagnosis

Sr. No.	Oxygen Saturation	Pneumonia	Severe Pneumonia	Very Severe Pneumonia	Total
1	2-12 months	14	22	7	43
2	13-60 months	37	18	2	57
3.	Total	51	40	9	100

Table 3 shows 36.99% hypoxia in this investigation. Nine of 51 pneumonia cases had hypoxia. 81.82% of severe pneumonia and 100% of very severe pneumonia children had hypoxia.

Discussion

A significant objective of this research was to determine the prevalence of hypoxemia in children who were suffering from an acute infection of the lower respiratory tract. This study included participation from one hundred adolescents who were registered at the institute and who were diagnosed with acute lower respiratory illness. Given that there were 1.61 times as many men as there were women, it may be deduced that the majority of those present were males. According to the findings, 52.5% of the children were younger than 12 months, while 47.5% were older than 12 months according to the findings [9-11]. Approximately the same number of cases of coughs, colds, and pneumonia were reported by people of both age groups. On the other hand, in comparison to older adults, infants had a higher risk of developing severe or very severe

pneumonia. There were approximately the same number of patients in both age groups who were determined to have a less severe version of the disease [12-14]. Additionally, there was a rise in the number of infants who were diagnosed with cases of severe and extremely severe pneumonia. In 36.99% of the cases that were examined in this study, hyperoxia was discovered. Out of the 56 persons who were diagnosed with asthma, twelve had low oxygen levels. There was a presence of hypoxia in 81.82 percent of children who had severe pneumonia, and in one hundred percent of those who had very severe pneumonia [15-17].

The severity of the sickness was directly proportional to the degree of hypoxia that was present. Hypoxia affects one hundred percent of persons who have very severe pneumonia, eighty-four percent of people who have severe pneumonia, and nine percent of people who have pneumonia [18-20]. Eight percent of people who had severe pneumonia (all cases were judged to be very severe) and eighteen percent of those who had pneumonia had low oxygen levels. A cough and fever, which are the most common symptoms of illness, were present in patients who were hypoxemic as well as individuals who were not hypoxemic, as indicated in the table. Hypoxemia and nasal discharge are closely related to one another in a significant way [19-21].

Hypoxemia was found to be highly associated with a number of symptoms, including breathlessness, rapid breathing, and difficulty swallowing. A significant connection was found between hypoxemia and breathing difficulties, tachypnea, and the inability to take in food or beverages, according to the findings of the newly published study [22-24]. According to the findings of the study, there is a significant connection between hypoxia, rapid breathing,

and the inability to consume food or liquids. There is a considerable correlation between hypoxemia and a history of neonatal respiratory difficulties as well as a diet that is significantly deficient in nutrients, according to the findings of several studies [25-26].

Conclusion

According to this statistics, 36.99% of children with acute lower respiratory infections experienced hypoxia. A much greater proportion of infants under 12 months experienced hypoxemia. Hypoxemia was significantly associated with nasal congestion, dyspnea, tachypnea, and inability to consume food or liquids.

Conflict of Interest

None

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