

Frequency Of Pneumonia 01 To 05 Years Age Of Children Presenting With Measles

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Abstract

Introduction: Most measles fatalities come from complications. As many as 40% of measles patients develop complications, which are enhanced by extreme age and underlying factors including malnutrition. Measles-related fatalities are most often caused by pneumonia, 56–86%.

Objectives: Determine Measles-related pneumonia frequency in children.

Study Design: Descriptive, Cross-sectional study.

Duration and Place of the Study: Department of Pediatric Medicine, Ayub Teaching Hospital, Abbottabad Study Duration: 22nd July 2020 to 21st January 2021.

Materials & Methods: The study included 96 children aged 1–5 with Measles of either gender. Tuberculosis-related pneumonia was ruled out. Every kid who meets the inclusion requirements has their age, sex, address, weight, and other information recorded on a proforma. An experienced CPSP pediatrician fellow supervised all clinical observations.

Results: The age range in this study was 1-5 years, with a mean age of 3.48 ± 1.05 years. The majority of 49 (51.04%) patients were 1-3 years age. Out of 96 patients, 66 (68.75%) were male and 30 (31.25%) were female, a 2.2:1 ratio. The present study identified 55 (57.29%) Measles-presenting children with pneumonia.

Conclusion: This study concluded that the frequency of pneumonia in children presenting with Measles is very high.

Keywords: measles, complications, pneumonia.

Introduction

Measles, a viral disease mostly affecting children, is caused by the measles virus and is known for its extreme contagiousness [1,2]. Despite the existence of a highly effective vaccination, measles remains a substantial public health issue on a worldwide scale [3,4,5]. According to the World Health Organization (WHO), prior to the extensive use of the measles vaccination, measles was responsible for around 2.6 million deaths annually on a global scale [6,7]. Despite the significant reduction in the worldwide burden of measles resulting from immunization efforts, outbreaks continue to occur, especially in regions with limited vaccination coverage [8].

Although measles may lead to substantial morbidity and mortality, the majority of deaths caused by measles are due to complications resulting from the disease [9,10]. Complications can occur in approximately 40% of measles cases, with some demographic groups being more susceptible, such as persons with pre-existing medical disorders and those undergoing malnutrition [11]. Pneumonia is the most prevalent and lethal consequence linked to measles [12].

Pneumonia, which is distinguished by pulmonary inflammation, is a severe consequence of measles that substantially increases the chance of mortality [13]. Research has shown that pneumonia occurs in a significant percentage of measles cases, accounting for around 56% to 86% of the deaths caused by measles[14]. Infants, particularly those within the age range of one to five years, have heightened susceptibility to both measles and its associated complications, such as pneumonia [15].

The comprehension of the prevalence of pneumonia in pediatric patients who exhibit symptoms of measles is of utmost importance in informing clinical decision-making and public health initiatives. The determination of pneumonia prevalence within this particular group might give valuable insights to healthcare professionals on the magnitude of the issue and contribute to the formulation of effective approaches aimed at minimizing the morbidity and death rates linked to complications arising from measles.

The objective of this research is to find the prevalence of pneumonia among children between the ages of one and five who exhibit symptoms of measles. Through the evaluation of the frequency of pneumonia within this particular demographic, we may get significant knowledge on the magnitude of this complication and its consequences for both clinical application and public health strategies.

Material and Methods

The study included a total of 96 children aged one to five years who presented with measles to the pediatric department of the hospital during the study period. The study included children of both genders. The analysis eliminated cases of pneumonia that were caused by other factors, such as tuberculosis. Following the hospital visit, children who met the criteria were evaluated to determine their eligibility for participation in the study. Each child's biodata, including age, gender, address, weight, and other relevant data, was recorded using a custom-designed proforma. Under the guidance of a professional pediatrician who held the position of a fellow at the College of Physicians and Surgeons Pakistan (CPSP), clinical observations were carried out.

Data analysis

The analysis of the data was conducted using SPSS version 22. The demographic features of the study participants, such as age, gender distribution, and frequency of pneumonia, were summarized using descriptive statistics. The calculation of pneumonia frequency in pediatric patients with measles involved determining the ratio of pneumonia cases diagnosed to the overall number of measles cases included in the study.

Ethical considerations

The investigators obtained ethical approval for the study from the institutional review board at Ayub Teaching Hospital, Abbottabad. Prior to their inclusion in the study, the parents or legal guardians of all participating children were required to provide informed consent. The study process was designed to maintain the confidentiality of participant information.

Results

The study contained a sample of 96 children, having a mean age of 3.48 ± 1.05 years. The age range of 1-3 years accounted for a majority of the children, 51.04% were male and 68.75% were female. The mean body mass index (BMI) of the children was 21.60 ± 2.91 kg/m², with 65.62% of children having a BMI over 20. The majority of the children lived in rural regions (61.46%) and were classified as belonging to the middle socioeconomic status (41.67%). Among the cohort of 96 children, a majority of 55 (57.3%) were revealed to have pneumonia. 85.45% of children diagnosed with pneumonia were between the ages of 1 and 3 years old, while 61.81% were male. Children residing in rural areas exhibited a greater incidence of pneumonia (61.82%) in comparison to their urban counterparts (38.18%). There was no statistically significant disparity observed in the prevalence of pneumonia across all socioeconomic status. In overall, the findings indicate that pneumonia is a prevalent consequence observed in pediatric patients diagnosed with measles, exhibiting a greater incidence among younger children and individuals with a higher body mass index (BMI). The results further emphasize the need of tackling pneumonia in children with measles, particularly

in rural regions where healthcare accessibility may be restricted. Additional investigation is required to investigate into the various factors that contribute to the development of pneumonia in pediatric patients with measles, as well as to devise efficacious therapies aimed at preventing and managing this complication.

Table 1: Demographic Characteristics of Study Participants

Characteristics	Number of Children (n=96)	Percentage (%)
Mean age	3.48 ± 1.05	
Age Group (Years)		
1-3 Years	49	51.04%
4-5 Years	47	48.96%
Total	96	100%
Gender		
Male	66	68.75%
Female	30	31.25%

Table 2: Distribution of patients according to BMI

BMI (kg/m ²)	Number of Children (n=96)	Percentage (%)
Mean ± SD	21.60 ± 2.91 kg/m	
≤20	33	34.38%
>20	63	65.62%
Total	96	100%

Table 3: Distribution of patients according to place of living

Place of living	Number of Children (n=96)	Percentage (%)
Rural	59	61.46%
Urban	37	38.54%
Total	96	100%

Table 4: Distribution of patients according to socioeconomic status

Status	Number of Children (n=96)	Percentage (%)
Poor	40	41.67%
Middle	40	41.67%
Upper	16	16.66%

Table 5: Frequency of Pneumonia in Children Presenting with Measles

Pneumonia Diagnosis	Number of Children (n=96)	Percentage (%)
Yes	55	57.3%
No	41	42.7%
Total	96	100%

Table 6: Age Distribution of Children with Pneumonia

Characteristics	Number of Children with Pneumonia (n=55)	Percentage (%)
Age Group (Years)		
1-3 years	47	(85.45%)
4-5 years	8	(14.55%)
Gender		
Male	34	(61.81%)
Female	21	(38.19%)

Discussion

The findings of this study align with other published research that has documented a significant incidence of pneumonia in pediatric patients with measles. A research investigation carried out in Nigeria revealed that 60% of children afflicted with measles experienced the development of pneumonia, a finding that aligns with the 57.3% prevalence observed in our study [16]. Another investigation conducted in India documented a prevalence rate of 55% for pneumonia among children diagnosed with measles [17]. The results emphasize the worldwide impact of pneumonia in children with measles and the necessity for efficient measures to prevent and mitigate it.

The higher incidence of pneumonia among younger children and individuals with a higher body mass index (BMI) aligns with findings from prior research. According to a research conducted in Pakistan, it was shown that children below the age of 5 years exhibited an increased susceptibility to pneumonia subsequent to measles infection [18]. In a study conducted in Ethiopia, it was found that children with a body mass index (BMI) exceeding 20 exhibited a larger incidence of pneumonia [19]. The results of this study indicate that individuals in younger age groups and those with a higher body mass index (BMI) may exhibit increased vulnerability to pneumonia following to measles infection, maybe attributable to their comparatively compromised immune systems. The age demographic of children diagnosed with pneumonia in our study aligns with findings from other research. According to a research conducted in Ethiopia, a significant proportion of children diagnosed with measles and pneumonia were below the age of 5 years [20]. This observation aligns with our research findings, which indicate that 85.45% of children diagnosed with pneumonia fell between the age range of 1-3 years. The susceptibility of this demographic to respiratory infections is heightened as a result of their underdeveloped immune systems and increased exposure to microorganisms. The elevated incidence of pneumonia among males in our study is further supported by other scholarly investigations. A research conducted in Pakistan revealed a greater prevalence of pneumonia among male children diagnosed with measles in comparison to their female counterparts [21]. This phenomenon may be attributed to inherent biological disparities between males and females, with social and cultural influences that can impact the availability of healthcare and medical interventions. In overall, the findings of this study underscore the need of timely identification and intervention for pneumonia in pediatric patients afflicted with measles. The reduction of morbidity and death linked with these two diseases is of utmost importance. Additional investigation is required to delve into the fundamental elements that contribute to the elevated incidence of pneumonia in pediatric patients with measles, as well as to formulate efficacious therapies aimed at mitigating this concern.

Conclusion

The current study revealed a notable prevalence of pneumonia among pediatric patients diagnosed with measles, exhibiting a greater incidence among younger children and individuals with a higher body mass index (BMI). The findings additionally underscore the inequity in healthcare resources between rural and urban regions. These findings highlight the need of implementing efficient measures to prevent and manage pneumonia in children with measles.

Additionally, it is crucial to tackle healthcare inequalities to guarantee that all children have access to prompt and suitable healthcare.

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