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FREQUENCY OF ANEMIA IN CHILDREN SUFFERING FROM PNEUMONIA

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ABSTRACT

Objective: To determine the frequency of anemia among hospitalized children suffering from pneumonia in a tertiary care hospital. **Material and Methods:** Consecutive 145 children were taken in this cross-sectional study from March 2017 to February 2018 from OPD of Jinnah Hospital Lahore. History regarding fever, coughing and tachypnea was taken. Once registered in the study, all the relevant baseline investigations were done including blood tests and chest X-Ray. Venous blood sample (3ml) was drawn and sent to laboratory in EDTA vial for Hb level estimation to determine anemia and all the data was entered and analyzed using SPSS20. **Results:** Of these 145 study cases, 75 (51.7%) were boys while 70 (48.3%) were girls. Mean age of our study cases was 5.82 ± 2.51 years (with minimum age was 2 years while maximum age was 10 years). Most of our study cases i.e. 75 (51.7%) presented with hospital acquired pneumonia while 70 (48.3%) presented with community acquired pneumonia. Majority of our study cases i.e. 92 (63.4%) were from urban areas and were having poor social background i.e. 98 (67.6%). Mean hemoglobin level of our study cases was noted to be 9.70 ± 1.89 g/dl (with minimum Hb level was 6.5 g/dl while maximum Hb level was 12.6 g/dl). Anemia was present in 91 (62.8%) of our study cases. **Conclusion:** Very high frequency of anemia is noted in children with pneumonia in our study. Anemia was significantly associated with female gender, hospital acquired pneumonia, mother's educational level, increasing disease duration and poor socio-economic status. Anemia is generally neglected while treating pediatric pneumonia so pediatricians must check hemoglobin levels on routine basis among this targeted population.

KEYWORDS: Pneumonia, anemia, frequency.

INTRODUCTION

Pneumonia is the leading cause of serious illness and death in children worldwide and it can be generally defined as inflammation of the lung parenchyma. It is responsible for almost 1.2 million early childhood deaths annually.[1-3] The burden of this disease is disproportionately borne by low and middle income countries (LMICs) with 156 million new cases of pneumonia, 151 million are in low and middle income countries and more than 99% deaths related to pneumonia are seen in the same countries. Children who die of pneumonia ultimately die of respiratory failure, unable to deliver sufficient oxygen to vital organs.[4] Many common conditions of childhood, including malaria, bacterial sepsis, and severe anemia, produce a spectrum of clinical symptoms and signs that overlaps significantly with pneumonia, and differentiating between these conditions is challenging.[5-6] Anemia is widely prevalent among young children in LMICs, affecting 45% of preschool children worldwide and >65% of preschool children in Africa and Southeast Asia. In many cases, anemia is a marker for underlying malnutrition or comorbidities that increase the severity of pneumonia and risk of poor outcome. Anemia increases the risk of pneumonia and the risk of hospitalization for pneumonia.[7] A study conducted by Bhaskaram et al[8] reported high frequency of anemia 83 % in children with pneumonia. Another study conducted in Iran reported 24.2% patients with pneumonia were anemic.[9] Anemia is associated with worse outcomes in children suffering from pneumonia; various studies conducted abroad have reported varying frequencies of anemia in the targeted population.[8,9]

MATERIAL AND METHODS

Consecutive 145 children were taken in this cross-sectional study from March 2017 to February 2018 from OPD of Jinnah Hospital Lahore. All children with pneumonia aged 2-12 years of either sex having duration of symptoms for more than 5 days were included in our study. Patients with wheezing and underlying pulmonary pathology such as cystic fibrosis, bronchiectasis and broncho-pulmonay dysplasia, known cases of Asthma, known cases of Malignancy, significant heart disease and

upper airway mechanical problems were excluded from our study. History regarding fever, coughing and tachypnea was taken. Once registered in the study, all the relevant baseline investigations were done including blood tests and chest X-Ray. Venous blood sample (3ml) was drawn and sent to laboratory in EDTA vial for Hb level estimation to determine anemia and all the data was entered and analyzed using SPSS-20.

RESULTS

Our study included a total 145 children with pneumonia who met inclusion criteria of our study. Of these 145 study cases, 75 (51.7%) were boys while 70 (48.3%) were girls. Mean age of our study cases was 5.82 ± 2.51 years (ranging from 2 years to 10 years). Mean age of boys was 5.63 ± 2.56 years while that of girls was 6.03 ± 2.45 years (p = 0.338). Our study results have indicated that majority of children i.e. 99 (68.3%) belonged to age

group ranging from 2 to 7 years of age. Most of our study cases i.e. 75 (51.7%) presented with hospital acquired pneumonia while 70 (48.3%) presented with community acquired pneumonia. Majority of our study cases i.e. 92 (63.4%) were from urban areas and were having poor social background i.e. 98 (67.6%). Most of the mothers of these children, 92 (63.4%) were illiterate and 47 (32.1%) had educational level up to matriculation. Mean duration of illness was noted to be 8.91 ± 2.51 days (with minimum duration of illness was 6 days while maximum duration of illness was 14 days). Our study results have indicated that most of study cases i.e. 98 (67.6%) had disease duration ranging from 5 – 10 days. Mean hemoglobin level of our study cases was noted to be 9.70 ± 1.89 g/dl (with minimum Hb level was 6.5 g/dl while maximum Hb level was 12.6 g/dl). Anemia was present in 91 (62.8%) of our study cases.

Table No. 1: Stratification of anemia with regards to disease duration. (n = 145).

| Disease duration | Anemia | | P – value |
	Yes (n=91)	No (n=54)	
5 – 10 days			
(n = 98)	56	42	0.046
11 – 14 days			
(n=47)	35	12	

Table No. 2: Stratification of anemia with regards to mean disease duration. (n = 145) **.**

| Anemia | Disease duration | | P – value |
	Mean	SD	
Yes			
(n=91)	9.38	2.45	0.003
N0			
(n=54)	8.11	2.43	

DISCUSSION

Childhood pneumonia is the leading single cause of mortality in children aged less than 5 years.[10-12] The incidence in this age group is estimated to be 0.29 episodes per child-year in developing and 0.05 episodes per child-year in developed countries.[13-15] Our study included a total 145 children with pneumonia who met inclusion criteria of our study. Of these 145 study cases, 75 (51.7%) were boys while 70 (48.3%) were girls. Sakellaropoulou et al[16] reported 59% boys with pneumonia which shows similar trends of male gender predominance as that of our study results. Boloorsaz et al[9] et al reported 48.4% boys with pneumonia. Wrotek et al[17] also reported male gender predominance which is same as that of our study results. Duru et al[18] reported similar results. Mean age of our study cases was 5.82 ± 2.51 years (with minimum age was 2 years while maximum age was 10 years). Mean age of boys was 5.63 ± 2.56 years while that of girls was 6.03 ± 2.45 years (p = 0.338). Our study results have indicated that majority of children i.e. 99 (68.3%) belonged to age group ranging from 2 to 7 years of age. Boloorsaz et al[9] 4.7 ± 5 years mean age of the children with pneumonia which

is close to our findings. Sakellaropoulou et al[16] reported 4.67 ± 0.39 years mean age which is similar to that of our study results. Most of our study cases i.e. 75 (51.7%) presented with hospital acquired pneumonia while 70 (48.3%) presented with community acquired pneumonia. Mean duration of illness was noted to be 8.91 ± 2.51 days (with minimum duration of illness was 6 days while maximum duration of illness was 14 days). Our study results have indicated that most of study cases i.e. 98 (67.6%) had disease duration ranging from 5 – 10 days. Boloorsaz et al[9] from Iran reported 10.8 days mean disease duration which is close to our study results. Sakellaropoulou et al[16] reported similar results. Mean hemoglobin level of our study cases was noted to be 9.70 ± 1.89 g/dl (with minimum Hb level was 6.5 g/dl while maximum Hb level was 12.6 g/dl). Anemia was present in 91 (62.8%) of our study cases. Boloorsaz et al[9] reported 24.2% children with pneumonia had anemia which is quite less than that of our study results. Duru et al[18] reported 11.8 ± 1.4 g/dl mean Hb level in children with pneumonia which is quite high than that of our study results. A study conducted by Bhaskaram et al[8]

also reported high frequency of anemia 83% in children with pneumonia as like that of our study results.

CONCLUSION

Very high frequency of anemia is noted in children with pneumonia in our study. Anemia was significantly associated with female gender, hospital acquired pneumonia, mother's educational level, increasing disease duration and poor socio-economic status. Anemia is generally neglected while treating pediatric pneumonia so pediatricians must check hemoglobin levels on routine basis among this targeted population.

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