



Original Article

Clinical Profile and Outcome of Neonates Admitted with Pneumonia in a Tertiary Care Hospital

Tahmina Jahan Chowdhury¹, Archana Dev², Muazzem Hussain³, Habiba Jamila Khan⁴,
Rebeka Sultana⁵, Diponkar Poddar⁶

¹Assistant Professor, Department of Paediatrics, Jalalabad Ragib-Rabeya Medical College, Sylhet.

^{2,3}Associate Professor, Department of Paediatrics, Jalalabad Ragib-Rabeya Medical College, Sylhet.

⁴Registrar, Department of Paediatrics, Jalalabad Ragib-Rabeya Medical College Hospital, Sylhet.

^{5,6}Indoor Medical Officer, Department of Paediatrics, Jalalabad Ragib-Rabeya Medical College Hospital, Sylhet.

ABSTRACT

Neonatal pneumonia is one of the major causes of mortality and morbidity in Bangladesh. Though the clinical features are nonspecific, the diagnosis is difficult. This cross sectional study was conducted at the neonatal unit of the department of Paediatrics in Jalalabad Ragib-Rabeya Medical College Hospital, Sylhet, to evaluate the clinical profile and outcome of neonates admitted with pneumonia. The study was conducted among 30 neonates with pneumonia from July to December 2018 who fulfilled the inclusion and exclusion criteria by convenient sampling. The study results showed that, the majority (90.6%) of the cases were early onset within 0-3 days. Normal birth weight neonates (80%) were more affected than low birth weight neonates. Commonly found clinical features were difficulty in breathing in all cases (100%), followed by chest indrawing (67%), poor feeding (56.7%), grunting (50%), fever (30%), cough (10%), cyanosis (10%). The majority (56.7%) of the patients were discharged on request after clinical improvements and 10% of the patients died. This study summarized the current knowledge regarding clinical features of neonatal pneumonia that might help in early recognition and treatment of neonatal pneumonia to save sick neonates.

Keywords: Pneumonia, Neonates, Respiratory distress.

[Jalalabad Med J 2020; 17(2): 47-50]

INTRODUCTION

Pneumonia is an important cause of neonatal infection and accounts for significant morbidity and mortality, especially in developing countries, where the World Health Organization (WHO) estimates that 8,00,000 neonatal deaths occur each year from acute respiratory infections, mostly pneumonia¹. Throughout childhood,

Address of Correspondence:

Dr. Tahmina Jahan Chowdhury, Assistant Professor, Department of Paediatrics, Jalalabad Ragib-Rabeya Medical College, Sylhet.
Mobile: +8801711198494,
E-mail: tahminajahanope29@gmail.com

the greatest risk of death from pneumonia is in the neonatal period¹. The most important neonatal factor predisposing to infection is prematurity or LBW. Preterm LBW neonates have a 3-10 fold higher incidence of infection than term normal birth weight infants².

Neonatal pneumonia is the lung infection of a neonate. It is an inflammatory pulmonary process that may originate in the lungs or be a focal complication of a systemic process. The definition of pneumonia varies widely. WHO has defined pneumonia solely on the

basis of clinical findings obtained by inspection and respiratory rate¹. Neonatal pneumonia can be classified as early and late onset. Early onset pneumonia, in general, is defined as a clinical presentation in the first 48 hours up to 1 week of life, while late onset neonatal pneumonia occurs in the next 3 weeks. Intrauterine pneumonia is a subgroup of early onset neonatal pneumonia¹. Neonatal pneumonia is described as having early symptoms which may be nonspecific, like ill looking, lethargy, poor feeding, irritability, cyanosis, temperature instability, and respiratory symptoms like grunting, tachypnoea, retraction, flaring of alae nasi, cyanosis, apnoea, and progressive respiratory failure. Signs like dullness on percussion, change in breath sound and the presence of rhonchi. Radiology suggests new infiltrate or effusion².

As per my knowledge, there are few studies regarding neonatal pneumonia in Bangladesh. So this study was conducted to evaluate the important clinical profile and outcome of neonatal pneumonia among admitted neonates at Jalalabad Ragib-Rabeya Medical College Hospital, a tertiary care hospital, for early recognition and give them treatment accordingly to save their lives.

MATERIALS AND METHODS

This cross-sectional observational study was carried out at Jalalabad Ragib-Rabeya Medical College Hospital from July 2018 to December 2018. Thirty neonates with pneumonia, both term and preterm, admitted to the neonatal ward of the hospital during this period were selected conveniently according to inclusion and exclusion criteria. Before enrolment in the study, the pneumonia was diagnosed both clinically and radiologically. Pneumonia was diagnosed when neonates presented with any of the respiratory symptoms like rapid, noisy or difficult breathing, respiratory rate >60/min, severe chest indrawing, grunting or cyanosis, cough or fever, and poor feeding. The diagnosis of pneumonia was confirmed by a chest X-ray, read by the investigator and a senior radiologist. Radiological findings like nodular or any patchy opacity or sub lobar consolidation were recorded. Neonates with pneumonia having congenital heart disease, congenital malformations of the respiratory or gastro intestinal tract were excluded from the study. After taking written consent from the patient's attendant, details of his history were taken and a physical examination was conducted. The history included name, age, sex, residence, birth weight, gestational age of the neonates and symptoms included fever, cough, difficulties breathing, grunting and poor feeding. Physical examination findings included

temperature, heart rate, respiratory rate, chest indrawing, cyanosis, capillary refill time (CRT) and chest examination findings. Finally, the outcome of the patients in terms of discharged with advice, discharged on request or death was recorded. A structured questionnaire was used for recording all the information. The data was then analyzed manually and plotted into graphs and tables.

RESULT

In this study, 30 neonates with pneumonia were enrolled, who were diagnosed with pneumonia clinically and confirmed by chest radiograph. Among them, 27 (90%) neonates were between 0-3 days of age and the remaining 3 (10%) were 4-28 days old (Table-I). Among the study cases, 19 (63.3%) neonates were male and 11 (36.7%) were female (Figure-1). In this study group, 24 (80%) cases had normal birth weight (>2500 gm) and 6 (20%) cases were low birth weight (<2500 gm) neonates (Figure-2).

Table-I: Age distribution of neonates (n=30)

Age (In days)	Frequency	Percentage
0-3	27	90
4-28	03	10
Total	30	100

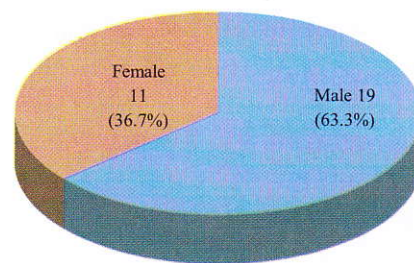


Figure-1: Sex distribution of study cases (n=30).

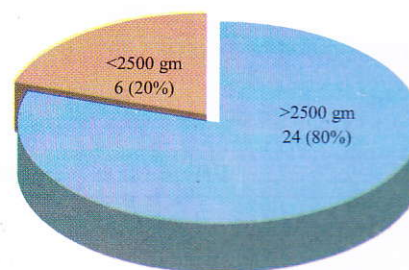


Figure-2: Study cases according to birth weight (n=30.)

The most common symptom was difficulty in breathing, present in 30 (100%) cases, followed by poor feeding 17 (56.7%), fever 9 (30%) and cough 3 (10%). The most common physical finding was fast breathing 28 (93.3%) followed by chest indrawing 20 (66.7%), grunting respiration 15 (50%) and cyanosis 3 (10%) among study neonates (Table- II). Among the neonates, 20 (66.7%) had oxygen saturation <90% and 10 (33.3%) neonates had oxygen saturation >90% within 24 hours of hospital admission (Figure-3). The majority (90%) of the neonates improved after treatment and 10% died. Among the survivors, 56.7% were discharged on request and 33.3% were discharged with advice (Table-III).

Table-II: Clinical presentation of study cases (n=30)

Clinical Presentations	Frequency*	Percentage*
Symptoms		
Respiratory distress	30	100
Poor feeding	17	56.7
Fever	9	30
Cough	3	10
Signs		
Fast breathing (>60/min)	28	93.3
Chest indrawing	20	66.7
Grunting	15	50
Cyanosis	3	10

(*More than one presentation was considered in one respondent)

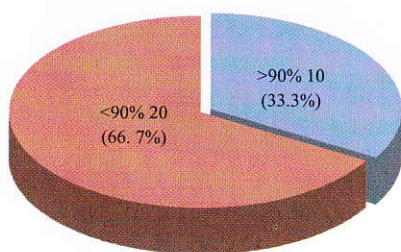


Figure-3: Oxygen saturation by pulse oxymetre of pneumonia cases on admission (n=30).

Table-III: Outcome of study cases (n=30)

Outcome	Frequency	Percentage
Discharged on request	17	56.7
Discharged with advice	10	33.3
Death	3	10

DISCUSSION

The study on neonatal pneumonia conducted at the neonatal ward of Jalalabad Ragib-Rabeya Medical College Hospital included 30 neonates with pneumonia. Among them, 27 neonates were 0-3 days old and 3 neonates were 4-28 days old. There was a study conducted in Dhaka Shishu Hospital which showed among 50 neonates, 42 (84%) neonates presented between 4-28 days of age and 4 (16%) were 0-3 days old³. The findings were dissimilar to the present study. Another study found that, out of 115 neonates, 11 (9.6%) were 0-7 days old, 104 (90.4%) were 8-28 days old and the mean age was 16.2 days⁴. In our study, male neonates 19 (63.3%) were more affected than female neonates 11 (36.7%), but a study in Dhaka Shishu Hospital showed female neonates 26 (52%) were affected more than males 24 (48%) which was not similar to our study³. But another study at Dhaka Medical College hospital showed that, male neonates were more affected by pneumonia than female neonates⁴, which was similar to our study.

The current study found that pneumonia was more common (80%) in neonates with a normal birth weight (>2500 gm). In Bangladesh, one study reported that, newborns suffering from pneumonia had a mean birth weight of 2870 gm, which was similar to the present study⁵. However, a study at Dhaka Shishu Hospital found that neonates with low birth weight had more pneumonia than newborns with normal birth weight³, which was dissimilar to our study.

Diagnosis of neonatal pneumonia is mainly dependent on clinical presentations and physical findings. The symptoms differed widely between individuals with pneumonia⁶.

In the current study, all 30 (100%) neonates with pneumonia presented with difficulty in breathing. Other symptoms were poor feeding 17 (56.7%), fever 9 (30%) and cough 3 (10%). Among the signs, fast breathing 28 (93.3%) was the most common, followed by chest indrawing 20 (66.7%), grunting 15 (50%) and cyanosis 3 (10%). The findings of the present study were comparable with a study in Bangladesh in which the presenting features of pneumonia cases were mostly rapid, noisy or difficult breathing (92.17%), lethargy (86.08%), cough (85.22%), cyanosis (26.95%), grunting (20%) and hyperthermia (12.17%)⁵. Another study conducted in Dhaka showed that, majority (88%) of the neonates with pneumonia presented with difficulty in breathing following poor feeding (74%), fast breathing (66%), chest indrawing (60%), grunting (18%), cough (18%), hypothermia (14%) and central cyanosis (14%)³. The current study

was comparable with a study in India which reported that respiratory distress was the most common presenting feature of neonatal pneumonia and 68% of respiratory distress was found to be due to pneumonia⁷. Bajad et al. also found that, the common causes of respiratory distress in neonates were hyaline membrane disease (25.43%), followed by birth asphyxia (24.66%), sepsis/pneumonia (23.49%) and meconium aspiration syndrome (7.09%)⁸.

Among the study neonates, two thirds had oxygen saturation <90% and the rest one third had oxygen saturation >90% within 24 hours of hospital admission. Duke et al. commented that, using oxygen on the basis of objective evidence of hypoxemia had the potential for a large reduction in neonatal mortality¹.

Overall mortality in our study was 10%, which was lower than in a study conducted by Mathur et al. where the death rate was 32%⁹.

CONCLUSION

Neonatal pneumonia was more common in males and normal birth weight newborns. The first three days of life are more vulnerable to developing pneumonia. Symptoms and signs of neonatal pneumonia are mostly non-specific, but respiratory symptoms and poor feeding should raise suspicion of pneumonia. Early detection by physical examinations and investigations and appropriate treatment can minimize morbidity and mortality.

REFERENCE

1. Duek T. Neonatal pneumonia in developing

- countries. *Arch Dis Child Fetal Neonatal Ed* 2005; 90(3): 211-9.
2. Stoll BJ, Kliegman RM. Respiratory tract disorder. In: Behrman RE, Kliegman RM, Jenson HB, editors. *Nelson Textbook of Pediatrics*. 17th ed. Philadelphia: Saunders; 2004. p573-88.
3. Farzana N, Amin MR, Khan AI. Clinical Features of Pneumonia Observed in Neonates Admitted in a Tertiary care Hospital. *DS (child) H J* 2016; 32(2): 94-97.
4. Choudhury AM, Nargis S, Mollah AH, Kabir LM, Sarkar RN. Determination of risk factors of neonatal pneumonia. *Mymensingh Medical J* 2010; 19(3): 323-9.
5. Islam MMZ, Hossain MM, Mamun MAA. Risk factors which affect the change of antibiotics in neonatal pneumonia observed in a tertiary care hospital. *Northern International Med Coll J* 2014; 6(1): 21-24.
6. Singh V, Aneja S. Pneumonia- management in the developing world. *Paediatr Respir Rev* 2011; 12(1): 52-9.
7. Black RE, Morris SS, Bryce J. Where and why are 10 million children dying every year? *Lancet* 2003; 361(9376): 2226-34.
8. Bajad M, Goyal S, Jain B. Clinical profile of neonates with respiratory distress. *Int. J Contemp Pediatr* 2016; 3(3): 1009-13.
9. Mathur NB, Garg K, Kumar S. Respiratory distress in neonates with special reference to pneumonia. *Indian Pediatr* 2002; 39(6): 529-37.

NOTE

We want to drop a note to thank Dr Dipankar Podder, who was working as an Indoor Medical Officer in the department of paediatrics during this research work. In a road traffic accident, we lost him forever on 18th December 2020. We would like to pay our gratitude to Dr Dipankar Podder for his tremendous support for our research article and pray for his departed soul.