



STUDY OF CLINICAL PROFILE, COMPLICATIONS AND OUTCOME OF PNEUMONIA IN AGE GROUP OF 2 MONTH TO 5 YEAR

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ABSTRACT

Introduction: Most cases of pediatric pneumonia worldwide are believed to occur in India. India also has the highest estimated number of childhood deaths due to clinical pneumonia. So we studied clinical profile, complications and outcome of Pneumonia in age group of 2 month to 5 year which will help in managing them.

Material & methods: we enrolled all admitted cases of pneumonia in age group of 2 month to 5 year from December 2014 to November 2016.

Results: 720 cases of pneumonia were enrolled (Male 399, Female 321, M:F 1.24:1). 392 (54.44%) cases were in age group of 2-12 month. In winter season 301(41.8%) cases were seen. 351(48.75%) cases were incompletely unimmunized. Fever (98.88%) & tachypnoea (94.16%) were most common symptom. Abnormal chest X ray was seen in 660 (91.66%) cases. Only 59 (8.19%) patients had positive blood culture. Empyema [32(21.91%)] was most common complication seen. Mortality rate was 4.72%.

Conclusion: Males were affected more than females (ratio of 1.24:1) and 2 – 12 month age group was most commonly affected. Maximum patients were incompletely immunized & seen in winter season. Fever & tachypnea were most common symptom while empyema was most common complication. Blood culture was positive only in 8.19% cases. Majority of patients of Pneumonia survived (95.28%) during study period.

KEYWORDS :

INTRODUCTION:

The World Health Organization defines pneumonia as an acute disease episode with cough combined with fast breathing with age specific cut values for increased respiratory rate. This case definition of childhood pneumonia is widely used in poor resource settings to guide the management of pneumonia. (1)

Childhood pneumonia is an important cause of morbidity and mortality worldwide. More than two million children younger than five years of age die from pneumonia every year, accounting for almost one fifth of overall childhood mortality(2,3). The estimated incidence of clinical pneumonia in developing countries is 0.29 episodes per child year equating to an annual incidence of more than 150 million cases(4).

Most cases of pediatric pneumonia worldwide are believed to occur in India. India also has the highest estimated number of childhood deaths due to clinical pneumonia. India needs special mention in the context of childhood pneumonia. In the numerical term, with 43 million new cases every year, India tops the list of 15 countries across the world with high disease burden. Morbidity rates tend to vary between 0.2 to 0.5 episodes per child year and approximately 10 to 20 percent of these episodes tend to be severe (3,4,5).

So, this study was undertaken to study clinical profile, complications and outcome of pneumonia in children. This will definitely help in managing patients of pneumonia in pediatric age group in developing country like India.

MATERIAL AND METHOD:

This prospective observational study was conducted in department of Pediatric, Government Medical College, Aurangabad Maharashtra from December 2014 to November 2016 after approval from Institutional Ethical Committee. After written informed consent, all clinically diagnosed cases of Pneumonia in age group 2 months to 5 years admitted in pediatric wards were enrolled in the study. We excluded patients of wheeze associated lower respiratory tract infection, bronchiolitis, croup and any other pulmonary

pathology with acute respiratory distress.

After enrolment, detailed history and physical examination were done. All necessary investigations like CBC, LFT, KFT, blood culture, chest X ray, USG thorax, CT thorax, sputum examination, pleural fluid examination & other required investigations were done. Treatment in the form of oxygen, antibiotics, antipyretics, cough syrup and ICD were given as per need. Complications were noted and treated accordingly. Outcome was noted as 'Discharge' or 'Death'.

Results:

During study period, we enrolled 720 patients of pneumonia. Table 1 shows clinical profile of children with pneumonia. Most commonly affected age group was 2-12 months (54.44%). There was a male preponderance with 399 (55.41%) patients being male and 321 (44.58%) were female with male to female ratio of 1.24:1. In present study, maximum number of patients were found in month of October to January (41.8%) with peak being in January which coincides with the winter season as shown in Table 1.

Table 1- clinical profile of children with pneumonia

Characteristics	No. Of patients (n=720)	Percentage (%)
Age distribution (months)		
2-12	392	54.44
13-60	328	45.55
Sex distribution		
Male	399	55.41
Female	321	44.58
Seasonal distribution		
February – May	124	17.22
June – September	295	40.97
October- January	301	41.80
Immunization status		
Unimmunized	56	7.78
Incompletely immunized	351	48.75
Completely immunized	312	43.47

In present study maximum number of patients were found to be incompletely immunized for age (48.75%), followed by completely immunized for age (43.47%) and unimmunized group (7.78%) as shown in Table 1.

Table 2- Symptomatology & Chest X-ray finding in patients of pneumonia

Symptom	No. Of patients	Percentage (%)
Fever	712	98.88
Cough	636	88.33
Tachypnea	678	94.16
Respiratory distress	651	90.41
Cyanosis	80	11.11
Convulsions	26	3.61
Lethargy	42	5.83
Other	21	2.91
Chest x-ray findings		
Abnormal	660	91.66
Normal	60	8.33

As shown in Table 2, in present study most common symptom was fever (98.88%) followed by tachypnoea (94.16%) and 660 patients (91.66%) with pneumonia had abnormal X-ray chest compared to 60 patients (8.33%), of pneumonia who had normal X-ray chest.

As shown in figure 1, blood culture was positive in 59 patients (8.19%) and was negative in remaining 661 patients (91.81%) with commonest organism as pneumococcus.

Figure 1- Blood culture reports

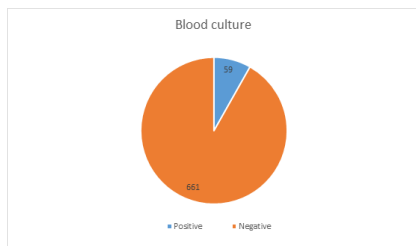


Table 3- Complications in patients with pneumonia

Complications	No. Of patients (n=720)	Percentage(%)
Empyema	32	21.91
Pneumothorax	12	8.21
Pyo-pneumothorax	13	8.90
Collapse	26	17.80
Lung abscess	08	5.47
Respiratory failure	31	21.23
Metastatic infections (brain, bones, joint, pericardium etc.)	24	16.43

In present study, amongst 720 patients 146 had complications. Most common complication was empyema in 32 (21.91%) patients followed closely by respiratory failure in 31 (21.23%) patients as shown in table 3.

Table 4- Outcome in patients with pneumonia

Complications	No. Of patients (n=720)	Percentage(%)
Survival	686	95.28
Mortality	34	4.72

Amongst 720 enrolled patients of Pneumonia, 686 (95.28%) patients survived as shown in table 4.

DISCUSSION:

The most common age group of presentation (2-12 month) and male preponderance (M:F 1.24:1) was similar in many studies

like Kapoor et al (6), Kumar et al (7). The reason for higher incidence of pneumonia in infants could be that infants have lower immune status and because of anatomy of respiratory tract. Also, male child considered more precious hence likely to be brought to hospital for treatment more which explains male preponderance in the study. Kumar et al (8) reported peak incidences of pneumonia in 2-3-year age group. The reason for this difference could be small sample size of their study.

In present study, maximum number of patients were found in months of October to January which coincides with winter season. Similar finding was seen in study by Kapoor et al (6) & Palafox et al (9). During winter season air has low humidity which dries the airway mucosa and impairs local defenses. It could explain higher incidence of pneumonia in winter.

Maximum number of patients were incompletely immunized in present study. Similar finding was seen in study by Kapoor et al (6) & Palafox et al (9). But study by Kumar et al (7) found that immunization status was not significantly associated with the pneumonia. The difference in finding could be due to less number (n=50) of patients included in their study.

Fever (98.88%) and tachypnea (94.16%) were most common presenting symptoms seen in present study. Similar finding was seen in Kabra et al (10) & Shan et al (11). Contrary to present study, Palafox et al (9) found respiratory distress as most common symptom in 79% cases. The reason for this could be that, in this study 38% of patients were taking treatment on OPD basis before enrollment in the study and were likely to be partially treated with antibiotics and antipyretics. This might be the reason for masking of symptoms such as fever.

In present study, 660 (91.66%) patients had abnormal chest X ray. Similar finding was seen by Lakhani et al (12), Bharti et al (13) & Kapoor et al (6). On the contrary Korppi et al (14) found abnormal chest X ray in only 55% of cases. They performed chest X ray in all patients of pneumonia including mild cases treated on OPD basis. This may explain less abnormal x ray in their study.

Blood culture was positive in only 59 (8.19%) patients in present study. Study done by Palafox et al (9) & Tewari et al (15) had similar low positivity of blood culture. Low positive yield of blood culture might be because of low & intermittent level of bacteremia in children with pneumonia as well prior antibiotic treatment. In contrary to present study, Shann et al (11) found positive blood culture in 36% cases. The reason for such high blood culture positivity is because they excluded patients with prior antibiotic treatment.

In present study, 146 patients developed complications. Most common complications were empyema (21.91%) followed by respiratory failure(21.23%). Similar finding was reported by Kapoor et al (6) & Lee GE et al (16). On the contrary, study done by Pabry R et al (17) found most common complication as respiratory failure followed by sepsis. This might be due to as they enrolled children below 2 years of age with approximately half being infants who are known to have severe disease as they have shorter respiratory passage and hence respiratory failure was the most common complication.

In present study 686 (95.28%) patients survived. Study by Palafox et al (9) & Virkki R et al (18) had similar survival rates. Nantanda R et al (19) found higher mortality rates than present study. This difference could be due to enrollment of cases from different geographical location which explains higher mortality.

CONCLUSION:

During study period 720 patients of pneumonia in age group 2 month to 5 year were enrolled. Males were affected more than females and 2 – 12 month age group was most commonly affected. Maximum patients were incompletely immunized & seen in winter season. Fever & tachypnea were most common symptom while empyema was most common complication. In present study mortality rate was 4.72%.

REFERENCES

1. Wardlaw, T.; Johansson, E W .; Hodge, M. 2006. Pneumonia : The forgotten killer of children. Bulletin of World Organization, Vol. 7, 4-44.
2. Williams BG, Gouws E, Bischi-Pinto C, Bryce J, Dye C. Estimates of world wide distribution of child deaths from acute respiratory infections. *Lancet Infect Dis.* 2002;2:25-32.
3. Bryce J, Boschi-Pinto C, Shiva K, Black RE, WHO Child Health Epidemiology Reference Group. WHO estimates the cause of death in children. *Lancet.* 2005;365:1147-52.
4. Rudan I, Tomaskovic L, Boschi-Pinto C, Campbell H, WHO child health Epidemiology Reference group. Global estimate of the incidence of clinical pneumonia among children under 5 years of age. *Bull world Health Organ.* 2004;82:895-903.
5. Yorita KL, Holman RC, Sejvar JJ, Steiner CA ,Schonberger LB. Infectious disease hospitalization among infants in the United States. *Pediatrics.* 2008;121:244-52.
6. Reddaiah VP, Kapoor SK. Epidemiology of pneumonia in rural under fives. *Indian J. Pediatric* 1990;57 401-404.
7. Kumar KGR, Bakshi S., Samantraya JC, Banerjee U & Arya LS. Transthoracic lung Aspiration in etiology of pneumonia. *India J of pediatric* 2004; 71:129-132.
8. Kumar V. Epidemiologic methods in acute respiratory infections. *Indian J pediatric* 1986;54:205- 211.
9. Palatox M, Guiscafne H, Reyes H, Munoz O, Martinez H. Diagnostic value of tachypnea in pneumonia defined radiologically. *Arch Dis Child.* 200;82:41-5.
10. Kabra SA, Broor S, Lodha T, Ghosh M, Pandey RM. Can we identify acute severe viral lower resp tract infection clinically? *India pediatric* 2004; 41:245-249.
11. Shann F, Hart K, Thomas D. Acute lower respiratory tract infections in children: possible criteria for selection of patients for antibiotic therapy and hospital admission. *Bull World Health Organ.* 1984a;62:749-53.
12. LaKhanl, Dhalrya, and PraSaD MuLey. " The association of positive chest radiograph and laboratory parameters with community acquired pneumonia in children." *Journal of clinical and diagnostic research: JCDR* 7.8(2013):1629.
13. Bharti B, Kaur L, Bharti S. Role of chest x-ray in predicting outcome of acute severe pneumonia. *Indian Paediatr. J.* 2008;45:889-90.
14. Korppi M, Heiskanen-kosma T, Jalonen E, Saikkup, Leinonen M, Halonen P, et al. Aetiology of community-acquired pneumonia in children treated in hospital. *Eur J Pediatr.* 1993a;152:24-30.
15. Tewari AD, Sen R, Mittal SK, Saini R, Sen J. Lung puncture aspiration in the diagnosis of acute pneumonias. *Indian pediatric* 1991;28;647-652.
16. Lee GE, Lorch SA, Shuffler -Collins S, et all. National hospitalization trends for pediatric pneumonia and associated complications. *Pediatrics* 2010;126:204-213.
17. Pabary R, Balfour-Lynn IM. Complicated pneumonia in children. *Breathe.* 2013 Mar;9:210-22.
18. Virkki R, Juven T, Rikalainen H, Svedstrom E, Mertsola J, Ruuskanen O. Differentiation of bacterial and viral pneumonia in children. *Thorax.* 2002;57:438-41.
19. Nantanda R, Kumar V, Amitosh V. Community acquired pneumonia and outcome. 2008;15:215-219.