

Status of Persistent Pneumonia in Tertiary Level Hospitals of Dhaka City

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Abstract

Introduction: A small subset of pneumonic children develops persistent pneumonia, which is one of the most common reasons for referral to the pediatric physicians and continues to be a major challenge.

Objectives: To identify the clinical profile and etiology of patient diagnosed as persistent pneumonia

Materials and Methods: This was a descriptive type of cross sectional study, was conducted from 1st June 2015 to 31st May 2018. This study was taken place at three tertiary level hospitals (Dhaka Shishu Hospital-25 cases, Sir Salimullaha medical college & hospital-20 cases and Dhaka medical college hospital-5 cases) of Dhaka city in Bangladesh. Age group of this study was from 0 to 18 years who had admitted into these hospitals during the study period and fulfill the inclusion criteria. Data were collected through face to face interview for taking history, doing physical examination and relevant investigations and or telecommunication for collecting data as regards pending investigation

Results: Among 50 cases of persistent pneumonia mean age group of study population 46 ± 38 months, males are 66% and majority of study population lives in rural area (66%). Main presenting complaints are fever, breathing difficulty, cough, repeated vomiting/ choking during feeding. Most common causes of persistent pneumonia are: GIT aspiration-20.8%, foreign body aspiration-16.7%, pulmonary tuberculosis (12.5%), congenital heart disease (8.3%) and cystic fibrosis (4.2%).

Conclusion: Persistent pneumonia is a challenging problem for pediatrician till to date. Before empirical use of anti-TB drug in persistent pneumonia we have to think for other causes.

Keywords: Persistent pneumonia, pediatric pneumonia, aspiration pneumonia, foreign body aspiration, pulmonary tuberculosis.

1. INTRODUCTION

Pneumonia is one of the leading cause of morbidity and mortality in children, especially those younger than 5 years, accounting for up to 4 million deaths each year in developing countries.¹ A small subset of these children develop persistent pneumonia, which is one of the most common reasons for referral to the pediatric physicians and continues to be a major challenge.²

Persistent pneumonia was defined as features of lower respiratory tract infection (i.e., cough, tachypnea and fever with or without chest retractions) with radiological evidence of infiltrates or consolidation in the lungs persisting for 30 days or more, despite receiving antibiotics for a minimum period of 10 days.^{1,3,4} there are limited data on the underlying causes predisposing to persistence of pneumonia in

children. Moreover, only few reports had studied this problem in developing countries.³ The incidence of all respiratory infections in developing countries varies from 4.2-8.7 per child per year; however, the incidence rates for pneumonia are much lower, about 10 per 100 children per year.³⁻⁵ Persistent pneumonia was defined as features of lower respiratory tract infection (i.e., cough, tachypnea and fever with or without chest retractions) with radiological evidence of infiltrates or consolidation in the lungs persisting for 30 days or more, despite receiving antibiotics for a minimum period of 10 days.⁶⁻⁹ However, some authors prefer to use the cutoff of 3 months.

2. MATERIALS AND METHODS

This was a descriptive cross sectional study. This study was taken place at three tertiary level hospitals of Dhaka city in Bangladesh, which were selected purposively for convenience of data collection and getting adequate number of sample of recurrent and persistent pneumonia. The hospitals were: Sir Salimullah Medical College and Mitford Hospital (SSMC & MH), Dhaka Shishu (Children) Hospital (DSH) and Dhaka Medical College and Hospital (DMC & H). This study was conducted from 1st June 2015 to 31st May 2018.

Patient of pediatric age group (0-18 years) with repeated attack of breathing difficulty who was admitted into these hospitals during the study period and fulfill the inclusion criteria, that are: 1) All admitted persistent pneumonia patients. 2) Features of lower respiratory tract infection (i.e., cough, tachypnea and fever with or without chest retractions) with radiological evidence of infiltrates or consolidation in the lungs persisting for 30 days or more, despite receiving antibiotics for a minimum period of 10 days. 3) Patient's parents/ attendant who had given informed consent. Exclusion Criteria includes: 1) Patient's parents / attendant who had denied giving informed consent. 2) Patients parents who refused / unable to do investigations. 3) History of pneumonia without radiological evidence. Data collection was started after admission of the patient in department of pediatrics in SSMC & MH and DMCH and department of pediatric pulmonology (Unit-5) in DSH. Each patient was

examined immediately after admission, after explaining the parents about the nature of the disease. If the patient fulfilled the inclusion criteria then enrolled for the study. Data were collected through face to face interview for taking history, doing physical examinations and relevant investigation and or telecommunication for collecting data as regards pending investigation.

Sometimes the primary investigator run through different referral hospitals like NIDCH mohakahali, BSMMU (Microbiology dept), Green life medical college, CMH Dhaka Cantorment, for collecting investigation report to reach a diagnosis. Investigations for the patients were sent step by step in favor of history, clinical examination and radiological finding. After taking complete history and physical examination a chest X-ray advised to do and collect the comments from radiologist about the CXR in most of the time. Then complete blood count and peripheral blood film are sending, then TB screening was done. In some cases we did CRP, Blood for C/S, USG of chest (when there was confusion regarding consolidation and pleural effusion), and HRCT. In suspected cases we advised for bronchoscopy, contrast medium swallow of upper GIT in T position, Stool for fecal fat, sweat chloride test, Serum IgG, IgA, IgM level (by Mephelometry method), T-cell, B-cell marker-by Flow cytometry method, Color Doppler echocardiography, Pleural fluid study, X-ray PNS O/M view, saccharine test. The previous investigation reports and chest x-ray were recorded and compared to reach a diagnosis or assess the prognosis. For reaching a final diagnosis expert opinion was always taken from Chief of the unit or department or from seniors.

3. RESULT

This was a cross sectional observational study was conducted with the aim to identify the etiology and clinical profile of persistent pneumonia in 3 tertiary level hospital of Dhaka City. In this study sample size was 50, though initial enrollment was 65, 15 cases were excluded from the study because they were refused further investigation and continued treatment and ultimately dropout from the study.

Table 1. Socio-economic Variables

Socio-economic Variables		Total n=50 (%)
Age (in years)	Mean ± SD	46 ± 38 month
Sex	Male	33 (66.0)
	Female	17 (34.0)

Average Monthly family income (Taka)	<10000	18 (36.0)
	10000-25000	23 (46.0)
	>25000	9 (18.0)
Residence	Urban	17 (34.0)
	Rural	33(66.0)
Exposure to smoke	Yes	32 (64.0)
	No	18 (36.0)

Table 1 showing age distribution of study group was 46±38 months, Male predominance (66%), majority patient came from rural area (66%) and

64% study population had the h/o exposure to smoke.

Table 2. Association of taking anti-TB drugs in persistent pneumonia (n=50)

Taking anti-TB drugs	Persistent pneumonia
Yes	6(8.3%)
No	44(91.7%)
Total	50(100.0%)

Table 2 showing among 50 cases 8.3% had the h/o taking anti-TB drug before enrollment in the study.

Table 3. Presenting complains of study cases

Presenting Complaints	% of symptoms
Cough Breathing difficulty	100
Fever	100
Breathing difficulty	100
Haematemesis	21
Bluish discoloration of face & nail bed	14
Chest pain	34
Repeated vomiting / choking	32
H/O foreign body aspiration	7
H/O documented weight lost	33
Frequent, bulky, greasy stools	6

Table 3 showing 100% of study population presented with fever, breathing difficulty and cough. Other presenting complaints were

repeated vomiting / choking, haematemesis, weight loss.

Table 4. General examination finding of study cases

General Examination	Percentage	
Pallor	84.0	
Cyanosis	20.0	
Clubbing	22.0	
Koilonychia	26.0	
BCG mark present	65.0	
Lymphadenopathy	21.0	
Tachycardia	67.0	
Tachypnea	95.0	
Temperature more than 100° F	93.0	
SPO2	< 90	20.0
	90-95	15.0
	> 95	65.0

Table 4 presents the prevalence of general physical examination findings among the study cases, revealing a high burden of clinical signs. The vast majority of cases presented with tachypnea (95.0%) and fever >100°F (93.0%). Pallor was common (84.0%), as was tachycardia

(67.0%). Notably, 65.0% of cases had a present BCG mark, while cyanosis (20.0%), lymphadenopathy (21.0%), and low oxygen saturation (SPO₂ <90% in 20.0%) were also observed.

Table 5. Etiology of persistent pneumonia among study cases

Diagnosis	Total	
	No.	%
GIT aspiration	11	20.8
Foreign body aspiration	9	16.7
Pulmonary tuberculosis	7	12.5
Congenital Heart Disease (VSD)	5	8.3
Bronchiolitis obliterance organizing pneumonia (BOOP)	4	8.3
Cystic fibrosis	2	4.2
Non CF bronchiectasis	2	4.2
Congenital cystic adenomatus malformation of lung	2	4.2
Germ cell tumor	2	1.0
Unknown	6	16.7

Table 5 showing most common etiology of persistent pneumonia in study cases were GIT aspiration followed by foreign body aspiration,

pulmonary tuberculosis and congenital heart disease. Cause could not be identified in 6 cases.

3.1. Source of the Data

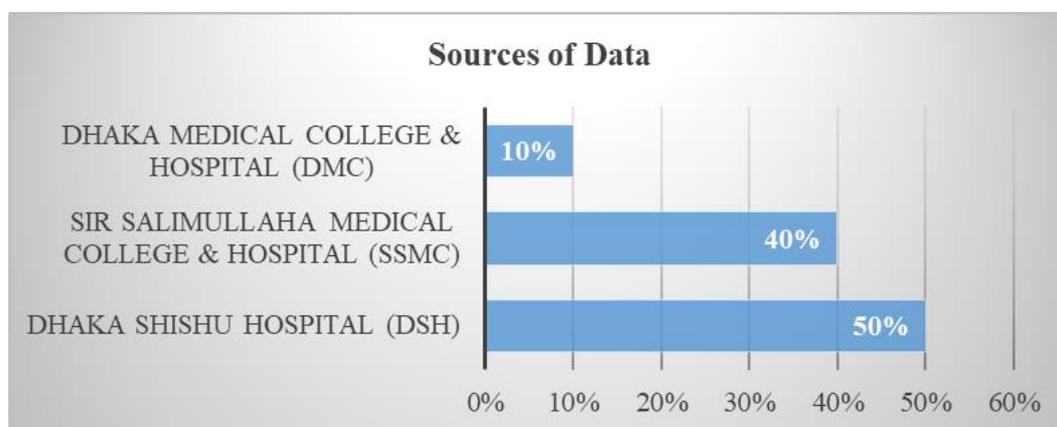


Figure 1. Bar diagram showing the distribution of the study samples by source of data hospital (n=50), here 25 (50%) samples are collected from DSH, 20 (40%) samples are collected from SSMC & MH and 5 (10%) samples are collected from DMC.

4. DISCUSSION

The most frequent underlying causes for persistent pneumonia in children were GIT aspiration, foreign body aspiration and pulmonary tuberculosis. Persistent pneumonia implies a chronic, non-resolving pneumonia. It is defined as persistence of symptoms and radiographic abnormalities for more than one month. Recurrent and persistent pneumonias usually result from deficiencies in the local pulmonary or systemic host defenses or from underlying disorders that modify the lung defense.¹⁰⁻¹³ The causes of recurrent and persistent pneumonias overlap considerably. The underlying disorders associated with these infections can be due to congenital malformations of upper or the lower respiratory tract, and cardiovascular system, recurrent aspirations, defects in the clearance of airway secretions especially cystic fibrosis, ciliary abnormalities, or disorders of systemic / local immunity.^{14,15} There are few reports on the underlying causes of persistent pneumonia in

children. Most of the reports are on recurrent pneumonia⁵⁻⁸ others have discussed recurrent and persistent pneumonia together. The age range from 0 to 18 years, mean age group of this study was 46±38 months. Out of 50 cases 33 were males (66%) and 17 were females (34%), male to female ratio is 1.9:1 in this study, which was quite similar with Kumar et al¹⁴ study where Out of 41 cases 27 were males (65.8%) and 14 were females (34.2%) with a male to female ratio of 1.9:1.

This study aimed at identifying the causes of persistent pneumonia. Most common causes of persistent pneumonia in tertiary level hospitals in Dhaka city are: GIT aspiration-20.8%, foreign body aspiration-16.7%, pulmonary tuberculosis (12.5%), congenital heart disease (8.3%) and cystic fibrosis (4.2%). In all patients, the underlying cause was diagnosed after presentation to the hospital. Saad K et al¹ in Egypt shows in their study, 113 out of 1228 patients (9.2%) met the diagnosis of recurrent / persistent pneumonia. Identified causes were: aspiration syndrome (17.7%), pulmonary TB

(12.5%), congenital heart disease (11.5%), bronchial asthma (9.7%), immune deficiency disorders(8.8%) and vitamin D deficiency rickets (7.0%).¹ The most common underlying illness in our study was similar with Saad K et al study¹.

Kumar et al.¹⁴ (2009) had showed in their study Out of 41 cases of persistent pneumonia 12 had aspiration due to gastro esophageal reflux disease or oil instillation, 8 had pulmonary tuberculosis and 12 had Gram negative bacterial infections, 3 had immunodeficiency due to HIV infection, 2 had congenital lung malformation, 2 had cardiac disorders and one had foreign body aspiration as causes of persistent pneumonia. The etiology could not be established in one case. In the present study out of 50 cases of persistent pneumonia 11 cases (20.8%) are due to aspiration, 9 cases (16.7%) due to foreign body aspiration, 7 cases (12.5%) due to pulmonary tuberculosis which is quite similar to Kumar et al. 14 study.

5. LIMITATIONS OF THE STUDY

This research is subject to several constraints. The modest sample size may limit the generalizability of the findings and the statistical power to detect weaker associations. As a descriptive, single-center study conducted in a specific geographic region, the results may not be fully representative of broader populations. Finally, some data collection relied on retrospective review or parental recall, which can introduce potential inaccuracies or reporting bias.

6. CONCLUSION

Persistent pneumonia is a challenging problem for pediatrician till to date. Before empirical use of anti-TB drug in persistent pneumonia we have to think for other causes.

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CONFLICTS OF INTEREST

There are no conflicts of interest.

REFERENCES

[1] Saad K, Mohamed SA, Metwalley KA Recurrent and persistent pneumonia among children in Upper Egypt. Mediterranean Journal of Hematology and Infectious Diseases 2013; 5 (1): e2013028

- [2] Wald ER. Recurrent and non-resolving pneumonia in children. *Semin Respir Infect.* 1993; 8: 46–58.
- [3] Dekate PS, Mathew JL, Jayashree M, Singhi SC. Acute community acquired pneumonia in emergency room. *Indian J Pediatr.* 2011; 78: 1127-35.
- [4] Robert M. Kliegman, Bonita FS, Joseph W, Nina FS, editors. *Nelson text book of pediatrics.* 20th ed. Philadelphia: Elsevier; 2015.
- [5] Palamaro L, Giardino G, Santamaria F, Romano R, Fusco A, Montella S, et al. Interleukin 12 receptor deficiency in a child with recurrent bronchopneumonia and very high IgE levels *Italian Journal of Pediatrics* 2012; 38; 46.
- [6] Hughes D, Recurrent pneumonia. *Not! Paediatrics & Child Health* 2013; 18 (9): 459-460.
- [7] Lodha R, Kabra SK. Recurrent and persistent pneumonia. *Indian J Pediatrics* 2000; 37: 1085-1092.
- [8] McIntosh K. Community-acquired pneumonia in children. *N Eng J Med.* 2002 Feb 7;346 (6): 429–37.
- [9] Garenne M, Ronsmans C, Campbell H. The magnitude of mortality from acute respiratory infections in children under 5 years in developing countries. *World Health Stat Q.* 1992;45:180–91.
- [10] Patria F, Longhi B, Tagliabue C, Tenconi R, Ballista P, Ricciardi G, et al. Clinical profile of recurrent community - acquired pneumonia in children. *BMC Pulmonary Medicine* 2013; 101186/1471-2466-13-60.
- [11] Ruuskanen O, Nurkka A, Helminen M, Viljanen MK, Kayhty H, Kainulainen L. Specific antibody deficiency in children with recurrent respiratory infections: a controlled study with follow-up. *Clinical & Experimental Immunology* 2013; 172(2):238-244.
- [12] Vaughan D, Katkin JP. Chronic and recurrent pneumonias in children. *Semin Respir Infect.* 2002;17:72-84.73.
- [13] Lodha R, Kabra SK. Recurrent/persistent pneumonia. *Indian Pediatr.*2000;37:1085–92.
- [14] Kumar M, Biswal N, Bhuvanewari V, Srinivasan S. Persistent Pneumonia: Underlying Cause and Outcome. *Indian J Pediatr.*2009; 76:1223–6.
- [15] Ozdemir O, Sari S, Bakirtas A, Zorlu P, Ertan U. Underlying diseases of recurrent pneumonia in Turkish children. *Turk J Med Sci.*2010; 40 (1): 25–30.

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