

Frequency of Gastroesophageal Reflux Disease in Children with Chronic Cough

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ABSTRACT

Objective: To identify the frequency of gastroesophageal reflux disease in children with chronic cough aged 2 months to 2 years. **Methods:** This cross sectional survey was conducted in 75 children between 2 months to 2 years in the department of pediatrics, Shaikh Zayed Hospital, Lahore. Children having chronic cough of > 4 weeks duration included in study and were admitted in ward and barium swallow was done in the Radiology Department. **Results:** total 75 patients of chronic cough were included in this study, out of these 75 patients GERD was diagnosed in 29(39%) on barium study. Out of these 29 patients, 20(27%) were in the age group of 2-9 months, 9(12%) were between 10-17 months. No patients of age group 18-24 months were diagnosed as GERD on barium study. In this 29 patients, 18(24%) patients were male and 11(15%) were female. **Conclusion:** Gastro esophageal reflux disease is one of the most common reasons for chronic cough seeking consultation of pediatricians. early diagnosis and management of GERD can lead to decrease morbidity in children.

Key words: GERD, Chronic Cough.

INTRODUCTION

Gastroesophageal reflux disease is a relatively common disorder in infants and children. It is associated with multiple complications. The coexistence of gastro esophageal reflux and a wide range of respiratory symptoms have been reported.¹

The prevalence and natural history of gastro esophageal reflux disease in children is poorly documented. About 88% of infants having reflux improve at age of 12 months, but very few later turn out to have gastro esophageal reflux disease.²

Gastro esophageal reflux may manifest as chronic respiratory symptoms which include chronic cough, recurrent wheeze and respiratory distress.¹ chronic cough in children is among problems that lead to frequent consultation with pediatricians and gastro esophageal reflux disease is one of the most common reasons for chronic cough.³

According to a study published in Indian Journal of Pediatrics 24 hour pH monitoring revealed GERD in 42.2% patients as a cause of their chronic respiratory symptoms.¹

Gastro esophageal reflux disease is a known potential trigger of asthma and aggressive antireflux therapy improves asthma symptoms in selected cases.^{4,5,6}

Relationship between gastroesophageal reflux disease and respiratory diseases among pediatric population in our part of world is poorly documented previously. With this background we want to make an effort to document the frequency of gastro esophageal reflux disease in children having chronic cough so that a treatable cause of chronic respiratory symptoms may be identified which if treated will also prevent the development of long term complications of GERD which include feeding disorders, inadequate weight gain, narrowing of the esophagus, and damage to the tissue in the esophagus (called Barrett's syndrome).

MATERIAL AND METHODS

This is a cross sectional survey conducted in the department of Pediatrics, Shaikh Zayed Federal Post Graduate Medical Institute, Lahore, Pakistan from 1st January to 30th June 2011 with the prior approval of the study protocol from the Ethical Committee of the Institutional Review Board of the concerned hospital. All the children with chronic cough between 2 months to 12 years of age were included in the study. All the children who fulfilled the following criteria were excluded from the study:

- Developmentally delayed children assessed by clinical examination
- Congenital malformations; assessed by clinical examination
- Gestational age <32 weeks; assessed by history taken from mother or any antenatal ultrasound report if available
- Congenital heart disease on echocardiography
- Evidence of having immunodeficiency on serum levels of immunoglobulin

Diagnostic criteria

Clinical symptoms	- Heart burn - Regurgitation - Dysphagia
Response to omeprazole (14 days treatment)	
Radiological findings	(signs of oesophagitis in barium studies).

Informed consent was obtained from parents/guardians of all children. Children aged 2 months to 2 years having chronic cough (>4 weeks) were admitted in ward and barium swallow was done in Radiology Department of Shaikh Zayed Hospital, Lahore. Results were reported by a single radiologist. All the information was collected through specially designed proforma.

All the collected data were analyzed through SPSS version 16. Mean and standard deviation was calculated for age and frequency and percentage was calculated for gender and outcome variable *i.e.* GERD.

RESULTS

We enrolled 75 children between 2 months to 2 years who fulfilled the inclusion criteria. Mean age at the time of presentation was 10.01 ± 6.10

months. Table 1 shows the age distribution of the patients with gastroesophageal reflux disease.

According to the sex distribution, 49 (65%) were male patients and 26(35%) female patients and the male to female ratio was 1.88:1. Table 2 shows the results of barium swallow of gastroesophageal reflux disease (GERD). Out of total 75 patients 29(39%) had GERD on barium swallow.

Table 3 shows 20 (27%) patients between 2-9 months of age and 9 (12%) of patients of 10-17 months of age had gastroesophageal reflux disease. But in group age 18-24 months, there was no patient of gastroesophageal reflux disease.

According to sex distribution, 18 (24%) male patients while 11 (15%) female patients had gastroesophageal reflux disease (Table 4).

Table 1: Age (months) Distribution of patients (n=75)

Age in months	No. of patients	Percentage
2-9	39	52.0
10-17	21	28.0
18-24	15	20.0
Total	75	100.0

Mean \pm SD= 10.01 ± 6.10 - SD: Standard Deviation

Table 2 Frequency of gastroesophageal reflux disease on barium swallow (GERD) (n=75)

Barium swallow (GERD)	No. of patients	Percentage
Yes	29	39.0
No	46	61.0

Table 3: Frequency of GERD according to Age (months) of patients (n=75)

Age in months	GERD	
	Yes (%)	No (%)
2-9	20 (27%)	19(25%)
10-17	9 (12%)	12(16%)
18-24	0	15 (20%)
Total	29(39%)	46 (61%)

Table 4: Frequency of GERD according to sex of patients (n=75)

Sex	GERD	
	Yes (%)	No (%)
Male	18(24%)	31(41%)
Female	11(15%)	15(20%)
Total	29(39%)	46 (61%)

DISCUSSION

Chronic cough in children is among problems that lead to frequent consultation with pediatricians and gastroesophageal reflux disease is one of the most common reasons for chronic cough.³

Respiratory disorders are common presentation finding in reflux patients. Gastroesophageal reflux is the major cause of recurrent aspiration. In infants, gastro-esophageal reflux disorder (GERD) may occur when muscles in the upper part of the stomach are still immature and forced gastric content back up, causing persistent vomiting. Some research also suggests that GERD in infants may contribute to respiratory tract infections by triggering inflammation in these upper passages. GERD usually causes asthma symptoms and aspiration pneumonia.⁷

In children with cough of more than four weeks duration, GER was found to be the third most common etiology (15%) behind cough variant asthma and chronic sinusitis, both of which are frequently associated with GER.^{3,7,8}

Prematurity is a predisposing factor for GERD which was excluded in this study and was consistent with another study according to which, older preterm infants referred for evaluation of GER had an increased incidence of symptoms, including apnea, choking, or behavioral events, compared healthy infants.⁹

Out of 75 cases, most of the patients (52%) presenting with GERD belong to age group 2-9 months and 28 % were between 10-17 months and 20% were between 18-24 months respectively. GERD was eventually diagnosed in 29 patients making 39% which is comparable to a study in which study group consisted of fifty-two (4 months-10 years) children who were diagnosed as GERD as the cause of chronic respiratory symptoms by 24 hours pH monitoring. 24 hour esophageal pH monitoring revealed GER in 22(42.2%) patients as a cause of their chronic respiratory symptoms.¹

Out of 29 patients, 20 (27%) were of age between 2-9 months and 9 (12%) were between 10-17 months, so frequency was highest at age less than 1 year comparable to a study in which total of 1700 children and adolescents with first diagnosis of GERD were identified in thin during 2000 to 2006.

The incidence of GERD was 0.84 per 1000 person-years (95% CI: 0.80-0.89). Among 1-year-old children, the incidence of GERD was 1.48 per 1000 person years (95% CI: 1.27-1.73). Incidence then decreased until the age of 12 years.¹⁰

Another study included 295 children presenting with suspicion of GERD were reviewed for presenting symptoms including: (1) airway symptoms: stridor, frequent cough, recurrent croup, wheezing, nasal congestion, obstructive apnea, blue spells, hoarseness, throat clearing: (2) feeding symptoms. Children who present with a certain constellation of airway or feeding symptoms are more likely to have a positive GERD test.

Children 2 years old or less are more likely to present with airway symptoms or feeding difficulties.¹¹

Out of 29 (39%) patients, 18 (24%) were male, so in this study there was male preponderance comparable to another study according to which in Pakistan, using the ACG criteria, the overall frequency of gastroesophageal reflux symptoms was 24% (228/963) with 58% (133/228) males and 42% (95/228) females.¹²

CONCLUSION

Chronic cough in children is among problems that lead to frequent consultation with pediatricians' in our country and gastro esophageal reflux disease is one of the most common reasons for chronic cough.

In order to identify children with GERD, clinicians need to be aware of the age-related differences in the presentation of this disease. It is likely that the early identification and management of GERD during childhood will result in overall decrease morbidity, mortality and healthcare costs.

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