

# A Clinical Study of a Wheezing Child

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**Abstract:** Introduction: Wheezing or noisy breathing is one of the common symptoms with which children are consulted in the pediatric outpatient or admitted into hospital for investigation and treatment. In view of the multiplicity of conditions that cause wheezing, the present study is under-taken to study the common causes of wheezing or noisy breathing in children. Aims and Objectives: - Primary Objective: - Clinical study of wheezing child in children aged 2 months to 14 years. Secondary Objective: - To study the common causes of wheeze in our hospital setup. Results: Bronchial asthma (50%), bronchiolitis (16.6%), Tropical eosinophilia (8.3%), round worm infestation (8.3%), croup (5.81%), primary complex (4.15%), broncho pneumonia (3.32%), foreign body (2.5%), rickets with coastochondral beading (0.81%). Conclusion: Though the common cause of wheezing was Bronchial Asthma, other causes like bronchiolitis in infants, Tropical eosinophilia, and round worm infestation in elder children were responsible for Asthma like attacks.

**Keywords:** Bronchial Asthma; Bronchiolitis; Respiratory infections; Wheezing

## 1. Introduction

Wheezing or noisy breathing is one of the common symptoms with which children are consulted in the pediatric out-patient or admitted into hospital for investigation and treatment. "Wheeze is a characteristic harsh breathing, audible at times without the aid of stethoscope, due to partial obstruction of upper respiratory tract including trachea, bronchi and bronchioles either due to extrinsic and intrinsic of factors and is characterized by expiratory dyspnea and prolonged respiration<sup>(4)</sup>." For many it is thought to be synonymous with bronchial asthma, but 'all that wheezes is not asthma'<sup>(3)</sup>. Wheezing is a symptom of many pathological conditions, the aetiology of which has to be investigated for proper management of the case. Apart from Bronchial asthma other causes like tropical eosinophilia, acute respiratory infections like Bronchiolitis and helmenthic infestation must be thought of<sup>(16)</sup>. Wheeze that is localized and lateralized (unilateral) is always secondary to obstruction of one of the bronchi either due to foreign body in the lumen or extrinsic pressure by enlarged lymphnode, tumour, or anomalous blood vessel.

In view of the multiplicity of conditions that cause wheezing, the present study is under-taken to study the common causes of wheezing or noisy breathing in children.

### Objectives:

**Primary Objective:** -Clinical study of wheezing child in children aged 2 months to 14 years.

**Secondary Objective:** -To study the common causes of wheeze in our hospital setup.

## 2. Materials and Methods

**Study Design:** Open Observational longitudinal Study.

**Study Period:** 2 years from June 2018- May 2020.

**Sample Size:** 260

**Inclusion Criteria:** All children who presented to the OPD&IPD with history of noisy breathing, wheezing, and breathlessness were included in the study.

**Exclusion Criteria:** 1. All Children <2months and >14 years are excluded from the study. 2. Breathlessness due to CVS, CNS causes is excluded.

### Method of Collection of Data

The study was conducted in our hospital at Katuri medical college and Hospital, Guntur.

## 3. Results

### Total Number of Cases Studied- 120

Out of these cases 120 cases are studied in detail as in-patient and out-patient. The following table shows the analysis of the in-patient cases from the etiological points of view:-

Aetiology	No of cases	%
Bronchial Asthma	60	50.0%
Bronchiolitis	20	16.60%
Tropical Eosinophilia	10	8.30%
Round worm infestation	10	8.30%
Croup	7	5.81%
Primary complex	5	4.15%
Bronchopneumonia	4	3.32%
Foreign body	3	2.5%
Rickets with coastochondral beading	1	0.83%

The study is a selective one because those cases which could be followed were included in the study. Many of the cases, for example Bronchial Asthma cases were referred along with diagnosis. Table No: 1 shows that the common cause of wheezing in children is bronchial asthma but bronchiolitis in infants (16.6%) and tropical eosinophilia (8.3%) round worm infestation (8.3%) in older children constituted large percentage. Acute respiratory infections like Bronchopneumonia and laryngo-tracheobronchitis in younger children can present with the complaint of wheezing for the relatively small bronchi can get easily narrow by inflammatory oedema and mucous secretions.

Those cases where wheezing was localized or confined to one half of the chest, when investigated the cause was either in the lumen such as foreign body or pressure on the wall of bronchus by enlarged lymphnodes of primary complex.

**Table 2: Age Wise Distribution of Bronchial Asthma**

Age	Cases	Percentage
1-4 Years	14	23%
5-9 Years	42	70%
10-12 Years	4	7%

**Table 3: Age Wise Distribution of Bronchiolitis**

Age	Cases	Percentage
2-3 months	2	20%
4-6 months	4	20%
7-12 months	10	50%
1-2 months	4	20%

**Round worm infestations** with wheezing was total 10 cases.

**Other cases:** Under this heading were included respiratory infections like acute laryngo Tracheo-Bronchitis, primary complex, bronchopneumonia cases. One case was having marked costochondral beading (rickets) so as to cause pressure on the lung parenchyma and the child was prone to respiratory infection and wheezing attack. The X-ray chest was showing pulmonary plethora and fine reticular appearance. This probably is due to frequency of respiratory infections causing narrowing of bronchial lumen and wheezing attacks.

#### 4. Discussion

A review of conditions that cause repeated wheezing attacks in children is presented. A detailed study of 120 cases which presented with wheezing has been done to identify the etiological factors and treat it.

Though the common cause of wheezing was Bronchial Asthma, other causes like bronchiolitis in infants, Tropical eosinophilia, and round worm infestation in elder children were responsible for Asthma like attacks.

An out-patient survey revealed wheezing or noisy breathing as one of the common symptoms with which children are brought to out-patient.

Localized or lateralized wheezing was due to obstruction of bronchus due to foreign body or pressure by enlarged lymph nodes of primary complex.

Bronchiolitis cases predisposed to Asthmatic attacks – 20% cases developed within one year.

#### 5. Conclusion

The common cause of wheezing in children is Bronchial Asthma but as aptly marked by Chevalier Jackson “All that wheezer’s is not Asthma”.

Other causes of wheezing are acute respiratory infections like Bronchiolitis, acute laryngo-tracheobronchitis in infants

and tropical eosinophilia, helmenthiasis in older children. Wheezing is a symptom of many diseases the cause of which must be thoroughly investigated for proper management of the case. Because of the small size of bronchi and abundance of lymphoid tissue and relatively frequent infections, allergic disorders during childhood, the air-way is more prone to obstruction resulting in difficulty not only during inspiration, but much more so in expiration.

Paroxysmal wheezing is typical of bronchial Asthma but in case of persistent wheezing other causes must be searched for.

Localized or lateralized wheeze must arouse the suspicion of obstruction of bronchus by a foreign body in the lumen or pressure by enlarged lymph node, aberrant vessel or tumor. Such cases are easily mistaken and are easily diagnosed as Asthma. These cases if diagnosed early can be treated permanently.

Bronchial Asthma must be differentiated from cardiac Asthma (Left Ventricular failure) or Renal Asthma (Acidosis). Large left to right shunt at Ventricular or ductal level increases the pulmonary blood flow and these children are prone to repeated pulmonary infections.

In cyanotic heart diseases like pulmonary atresia or Fallot’s Tetralogy, the bronchopulmonary anastomotic channels are dilated, and these aneurysmal dilated vessels cause pressure on small bronchi and bronchioles. Such children may present with wheezing or Asthmatic bronchitis like picture. But children with congenital heart diseases presenting with wheeze were being excluded from the study.

In Bronchial Asthma of childhood family history, allergic history, dietetic history and helminthic history are important to detect the aggravating or precipitating factors. Eczema was present in 15% of these children during infancy. Asthmatic attacks were common during winter and infection was one of the most common precipitating factor. In few cases food factors also aggravates wheezing attacks.

Bronchial Asthma can occur in all age groups and is not affected by socioeconomic status.

Only in 20% cases eosinophilia of blood and nasal smear was present during acute attack. During acute Asthmatic attack though there were signs of emphysema they reversed back to normal after the attack is treated and in 16.6% cases of cases permanent residual damage leading to emphysema and chest deformity was noted.

Treatment of Asthma includes not only symptomatic relief with bronchodilator but also treatment of infection, correction of dehydration and acidosis.

Bronchiolitis cases have an “Asthmatic diathesis” few authorities consider bronchiolitis as infantile manifestation of bronchial Asthma. So these infants who present with a picture of bronchiolitis must be watched for Asthmatic attacks in later childhood.

Worm infestation causes especially ascariasis is one of the common treatable cause of Asthma like attacks during childhood. In tropics when worm infection is excluded tropical eosinophilia must be kept in mind as a syndrome presenting with wheezing.

Foreign body must be suspected if respiratory symptoms develop suddenly along with barking cough and wheezy respiration. They may present with signs of obstructive emphysema, atelectasis or bronchiectasis. Unilateral “Bag-pipe sign” is important clinical signs which helps to localize the site of obstruction of bronchus. In such cases even though rhonchi are heard all over chest because of thin chest wall, rhochial fermitus is felt only on the side of bronchial obstruction.

Pulmonary tuberculosis can cause wheezing due to pressure of enlarged lymph nodes or by means of end bronchial tuberculosis.

## References

- [1] American Thoracic society: Chronic bronchitis, asthma and pulmonary emphysema. A statement by committee on diagnostic standards for non tuberculosis respiratory disease. Am Rev Respi Dis. 1962; 85:762-9.
- [2] Prasad S, Rana RK, Sheth R, Mauskar AV. A Hospital Based Study to Establish the Correlation between Recurrent Wheeze and Vitamin D Deficiency Among Children of Age Group Less than 3 Years in Indian Scenario. Journal of Clinical and Diagnostic Research. 2016; 10: SC18-SC21. Dawson B, Howbin G, Illsley R, Mitchell R. A survey of childhood asthma in Aberdeen. Lancet. 1969; 1: 827.
- [3] Viswanathan, R. A study of clinical profile of bronchial asthma. Ind Chest Dis. 1964; 6:109.
- [4] Tabachnik E, L evison H. Infantile bronchial asthma. J aller clin imm. 1981; 67:339.
- [5] Smith JM. Epidemiology and natural history of asthma, allergic rhinitis and atopic dermatitis (eczema) in allergy – principles and practice. Eds middleton E, Reed CE, Ellis EF, St Louis, the Cv Mosby Company. 1978,644-47.
- [6] Gina guide lines main report 2021.
- [7] IAP PG Text book of pediatrics 2nd edition.