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Clinico-Etiological Profile of Wheezing in Under Five Children in Hi-Tech Medical College & Hospital, Bhubaneswar

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Abstract:-

- ***Introduction***

Wheezing in childhood is not a single disorder and different wheezing associated respiratory illnesses have been recently described. Not all children who wheeze in early infancy will continue to wheeze into childhood andadulthood.

- ***Aims And Objectives***

This study aims to determine the clinical profile and risk factors of wheezing in children under five years of age in a tertiary care hospital in eastern India.

- ***Methodology***

All children less than 5 years of age diagnosed to have wheeze attending the pediatric department of Hi-Tech medical college and hospital, Bhubaneswar were evaluated by collecting baseline data of the child, clinical evaluation and investigation.

Type of study- Cross Sectional Study

Parents or legal guardians of infants who gave consent for the study were interviewed and asked standardized questionnaires about demographic characteristics as well as about wheezing and its potential risk factors.

Statistical Analysis- The data are collected and entered into excel sheets , relative statistical tests like percentage , graphs and tables are done.

- ***Result***

Wheezing in children under five years of age has a heterogeneous group of risk factors and clinical diagnosis. In our study Episodic viral triggered wheeze was the commonest cause of wheezing (22.30%) followed by acute bronchiolitis (20.76%) and bronchopneumonia (16.92%) and moderate bronchial asthma (13.84%). Wheezing in children less than five years of age was independently associated with male child, family history of atopy, antenatal infection, preterm delivery, NICU admission and overcrowding in the family.

- ***Conclusion***

The study of risk factors of wheezing in less than five years of age is important to help physicians identify young children at high risk of developing asthma and to improve public health prevention strategies in order to reduce the morbidity of wheezing in childhood.

Keywords:- *Infant, Wheezing, Asthma, Risk Factors.*

I. INTRODUCTION

Wheezing is a high pitched whistling sound made while breathing. Wheezing occurs during expiration or may occur during inspiration. Wheezing is caused by narrowing of airways(1) or due to inflammation. Wheezing is a common clinical findings in pediatric age group, especially below 5years of life.(2) Monophonic wheeze refers to a single-pitch sound that is produced in the larger airways during expiration, as in distal tracheomalacia or bronchomalacia. Wheeze is polyphonic when there is widespread narrowing of the airways, causing various pitches as air moves through different levels of obstruction, as seen in asthma. When obstruction occurs in the extrathoracic airways during inspiration, the sound is referred to as stridor.(3)

Wheeze during infancy is often a mixture of all causes of noisy breathing that includes nasal obstruction in the first 2 years of life. The main causes are infection, allergy and anatomical abnormalities. The etiologic diagnosis of wheezing in small infants varies considerably and in most instances the clinical manifestations are associated with viral infection.(1-9) It is presumedthat asthma can manifest early in infants, however the diagnosis of asthma is difficult in this age group.

II. MATERIAL AND METHODS

The study was conducted over a period of one year i.e from June 2020 to April 2021 and included 130 patients diagnosed with wheeze.

- **Inclusion criteria**

a. Children who wheeze below 5years of age.
b. Parents gave consent for the study.

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- **Exclusion criteria**

Children having chronic diseases that could affect the respiratory system like

a. Neuropathies
b. Myopathies
c. Heart diseases
d. Genetic diseases
e. Severe malformations
f. Parents not willing to participate in the study.

All the included children were evaluated in OPD & IPD of the pediatric department of Hi-Tech Medical college and Hospital, Bhubaneswar. Demographic profile was recorded.

Detailed clinical history taken regarding associated risk factors such as family history of asthma, prematurity, low birth weight, wheezy sibling in household, early weaning, exposure to smoking, low parental socioeconomic status, NICU/SNCU admission, feeding history, maternal drug intake during pregnancy, maternal dietary habit, neonatal antibiotics uses and overcrowding.

Wheeze in under 5 children have been classified in various ways

Based on the duration of wheeze the classification is as follows. (10)

- **Transient wheeze:** It includes children who started having wheeze before the age of 3years and are found to have disappeared by the age of 6 years.
- **Persistent wheeze:** Symptoms that are found to have continued until the age of 6years and older.
- **Late onset wheeze:** Wheeze that starts after the age of 3 years. (11)
- **Episodic (viral) wheeze**: Wheezing occurs during discrete episodes, and it isassociated with a viral cold; no wheeze between episodes.
- **Multiple trigger wheeze:** in this group the child has discrete exacerbations, but also wheezes between episodes.

III. RESULTS

Out of 300 children, clinical wheeze was present in 130 children. The mean duration of wheezing in these children was 2.33 days (range 1-7). Early morning wheeze and Cough was the most common symptom (59.61%, 31.53%) followed by Fever and running nose (41.92%,17.69%). Cough was present in all children. The mean duration of cough was 3.78 days (range 2-10 days). 52% of children had dry coughs. Cough was more in the morning (82%). In majority of children, it was non-spasmodic (80%) and in remaining was spasmodic (20%). On examination, all 130 children had a wheeze of which biphasic wheeze was present in 20% of children, expiratory wheeze in 79% patients and inspiratory wheeze was present in 1% of children.

Monophonic wheeze was present in 10% of children and polyphonic wheeze was present in 90% of children. Crepitation was present in 42% of children and it was occasional in 10% of children. Conducted sound was present in 48% of children. Viral prodrome is present in 49% of children. 70.3% babies were full term however only 27.3% babies were preterm, 2.4% are post term. Out Of 130 children 68 children were delivered by NVD, 46 by LSCS and 32 have instrumental delivery. NICU admission was required in 56 (43.07%) children out of 130 children. In our study we found antenatal infection and NICU Admission were the risk factors. In our study we found that episodic viral wheeze (22.30%) is most common followed by acute bronchiolitis (20.76%) and bronchopneumonia (16.92%) and moderate asthma (13.84%). Foreign Body aspiration (1.53%) was the least common.

Age in months	Female	Male	Total
Below 12 months	18	39	57
12 - 24 months	6	16	22
24 - 36 months	5	11	16
36 - 48 months	5	8	13
48 - 60 months	8	14	22
Total	42	88	130

TABLE NO. 1:- AGE AND SEX DISTRIBUTION

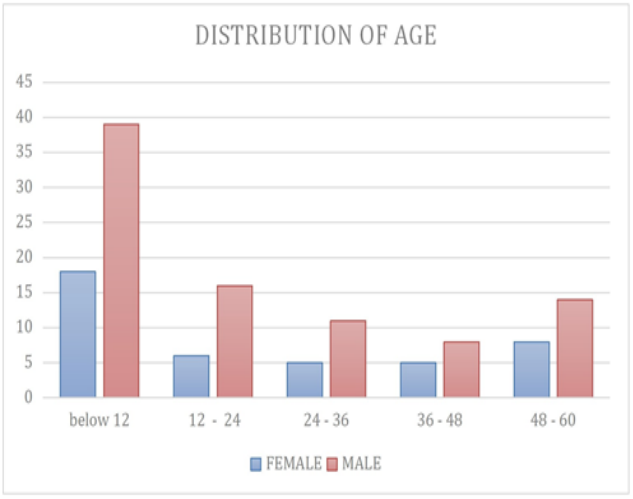

FIG. 1:- AGE AND SEX DISTRIBUTION

*From the table 1.0 and figure 1.0 denotes maximum no of cases are below 12 months of age and minimum in 36 - 48 months of age.

TABLE NO. 2.0: SEX WISE DISTRIBUTION

GENDER	FREQUENCY	PERCENT
FEMALE	42	32.3
MALE	88	67.7
TOTAL	130	100

FIGURE NO. 2.0 : SEX WISE DISTRUBATION

*Table 2.0 and figure 2.0 denotes male predominance.

TABLE NO. 3 SHOWS RISK FACTORS.

RISK FACTOR	CASES	PERCENTAGE
SMOKING		
NO	55	42.30%
Yes	75	57.69%
INFECTION		
NO	30	23.07%
YES	100	76.92%
NICU ADMISSION		
NO	56	43.07%
YES	74	56.92%
FEEDING PRACTICE		
EXCLUSIVE BREAST FEEDING	48	36.92%
PARTIAL BREAST FEED	22	16.92%
ARTIFICIAL FEEDING	60	46.15%
RELATION TO OVERCROWDING		
NO	52	40.00%
YES	78	60.00%

*From the above table we found that exposure to smoking, neonatal infection, NICU admission, artificial feeding practice and overcrowding are risk factors for wheezing.

TABLE NO. 4.0 : DIAGNOSIS

DIAGNOSIS	FREQUENCY	PERCENT
ACUTE BRONCHIOLITIS	27	20.76
MILD ASTHMA	16	12.30
MODERATE ASTHMA	18	13.84
EVW	29	22.30
MTW	11	8.46
RVW	5	3.84
BRONCHOPNEUMONIA	22	16.92
FB ASPIRATION	2	1.53
TOTAL	130	100.0

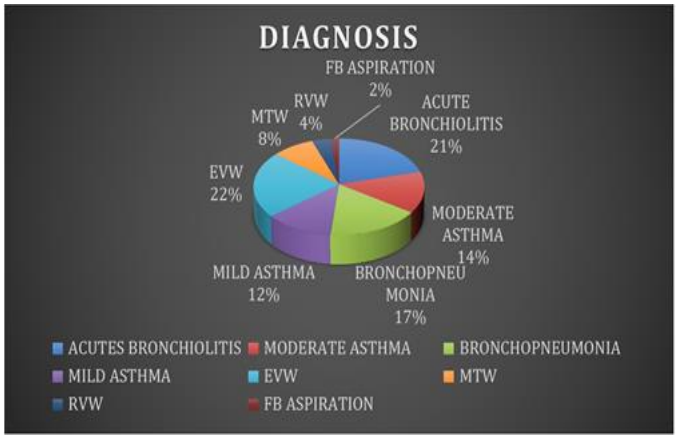

FIGURE NO. 3.0 DIAGNOSIS

From the above table no. 4.0 and figure no. 3.0 we found that episodic viral wheeze (22.30%) is the most common, followed by acute bronchiolitis (20.76%) and bronchopneumonia (16.92%) and moderate asthma (13.84%). Foreign body aspiration (1.53%) was the least common.

IV. DISCUSSION

It is seen that early infant wheeze and wheeze of late onset were more common if the study mother had asthma and independently if father had asthma. The propensity to wheeze in childhood is closely related to familial asthma history and asthma is known to aggregate in families. A number of published genetic studies, have confirmed earlier epidemiological findings of a preferential maternal transmission.(12) Environmental conditions that increase the rate of bacterial and viral infections are considered risk factors for transient wheezing and early onset persistent wheezing, probably related to the effect of viral infections in smaller airways.

In our study we found that family history of atopy is a risk factor for all the types of wheezing. Most of the wheezers are < 1 year of age. Male dominance was observed .

According to this study, smoking habits of the family members had a significant impact on children presenting with wheeze. Artificial feeding was the predominant feeding practice among the children who presented with wheezing. Overcrowding has a strong association with wheeze.

V. CONCLUSION

Wheezing, a very common symptom in under five-year old children, is usually accountable for a high demand of medical consultations and emergency care services with relatively high rates of hospitalization. Along with ARI, it plays an important role in infant mortality.

In this study it was found that age below 12 months, male sex, family history of atopy and artificial breastfeeding practice were important risk factors for wheeze. Therefore proper health education and counselling of parents,

promotion of exclusive breast feeding and improvement of allergy status can play a vital role in preventing occurrence of wheeze amongthe children.

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