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# Medi Quest BRS Hospital

A monthly News letter from BRS Hospital

## UNDER FIVE WHEEZE - PART 1

## EPISODIC WHEEZE AND MULTIPLE TRIGGER WHEEZE

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Recurrent wheezing occurs in a large proportion of children under 5years. Deciding when this is the initial presentation of asthma is difficult.

### Introduction:

50% of children would have experienced wheeze by the first 3years of life. But only 20% will experience continued wheezing there after

In up to half of people with asthma symptoms begin in childhood.

The differential diagnosis of wheeze under 5years

a) Episodic wheezers
b) Multi trigger wheezer
c) Asthma
d) Other diagnosis

### What is Episodic Wheeze and Multiple trigger wheeze ?

The European Respiratory society defined two symptom based phenotypes for wheezing in children under five .

**Episodic (viral) wheeze** – wheezing during discrete time periods with absence of wheeze between episodes usually associated with viral respiratory infection.

**Multiple trigger wheeze**

Wheezing present during discrete episodes as well as in between episodes.

**Triggers are :** Virus , activities like exercise , laughing , crying , exposure to smoke , aeroallergens.

### Trend Based classification:

This system was initially based on retrospective analysis of data from a cohort study

Transient wheeze: Symptoms began and ended before 3years

Persistent wheeze: Symptoms began before 3years and persisted after 6years

Late onset wheeze: Symptoms began after 3years of age

### Asthma under five years

In the past two years webinars and articles in leading Indian Pediatric Journals have talked about under five wheezing and shied away from using Asthma as a diagnosis under 5years.

This has led to the impression that under five wheezers were either episodic wheezers or Multiple trigger wheezing .

Asthma occurs in children under five years of age .

### Differential Diagnosis of Wheeze under five years

Before making the diagnosis of episodic wheezer, multiple trigger wheeze or asthma the following differential diagnosis to be considered.

### A.Most common differential diagnosis for wheeze

1.Bronchiolitis: The First episode of wheeze under 2years (1-24months) is considered to be

Bronchiolitis.
2. Foreign body – suspect in any patient who presents with wheezing of sudden onset with or without a choking episode

### B. Structural causes for wheeze

#### 1. Anomalies of the Tracheo Bronchial trace

Cong Tracheo malacia and broncho malacia – present in first three months. These infants have retractions, noisy breathing, croup like cough and biphasic stridor. The wheeze has a constant acoustic character ,varies in loudness depending on distance from site of obstruction and is aggravated by respiratory infections. The severity can range from a thriving child with noisy breathing to a child with severe respiratory distress and failure to thrive
Chest computed tomography can provide detailed anatomy of the mediastinum, large airways, and lung parenchyma.

#### 2. Vascular rings

These include complete (eg, double and right aortic arches) and incomplete (eg, pulmonary artery sling) rings and pulmonary artery slings. Presents in infancy, biphasic stridor is the most common sign and can also associated with difficulty in swallowing feeding due to esophageal compression.
Magnetic resonance imaging (MRI) with contrast (magnetic resonance angiography [MRA]) or multidetector computed tomography (MDCT)is the study of choice when a vascular ring or sling is suspected.

#### 3. Tracheo Esophageal Fistula and Laryngotracheal Bronchial Clefts.

Presents with cough , wheezing and choking , the last mentioned the most important clinical feature. TEF diagnosed by barium swallow, Laryngeal clefts by Laryngo broncho esophagoscopy.

#### 4. Mediastinal Masses

Thymic mass, tumours, and enlarged lymphnodes by virtue of compression can produce chronic cough and persistent wheeze.

#### 5. Endobronchial Tuberculosis

It can lead to intra-luminal obstruction and wheeze

#### 6. Cardiovascular Causes

Cardiac conditions that result in pulmonary artery dilation, such as large left-to-right shunts (eg, ventricular septal defect [VSD], atrial septal defect [ASD], pulmonary artery stenosis, pulmonary hypertension, absent pulmonary valve) and/or left atrial enlargement (eg, mitral valve stenosis), can compress large airways and cause wheezing.

### C. Non structural causes

#### Aspiration syndromes

GERD - Wheeze associated typically with vomiting and feeding
Swallowing disorders - In children with developmental delay
Vocal cord dysfunction.

### D. Other cause

Cystic Fibrosis
Primary ciliary dyskinesia
Primary immune deficiency

### Evaluation of a under five child with wheeze

**Is it wheezing?** — When a patient presents with a history of wheezing, it is crucial to ask the patient or the caregiver(s) to describe what they actually are experiencing or hearing (or demonstrate it with a home video or audio recording taken on a mobile phone). On many occasions, the word "wheezing" is used as a general term to describe noisy breathing that is primarily due to upper airway noises, including snoring, congestion, rattling, gurgling noises, or stridor.

#### Features in history which favour wheezing/multiple trigger wheezing /asthma

Intermittent ( associated viral infection, allergens , smoke, weather change)
Dry cough
Family history of asthma / atopy in father , mother or sibling .
Seasonal variation
Response to Anti Asthmatic medication

**Features not favouring episodic wheeze , multiple trigger wheeze and asthma**

Early onset wheeze < 3months
Perinatal problems
Poor response to asthma medication
Wheeze associated with feeding
Vomiting
Wheeze with less cough

## Clinical Examination in a child with wheeze :

1. Look for clubbing and cyanosis in general examination

**2. Auscultation**

**Wheeze**

Acoustic character is varied across lung fields in viral wheezing and asthma suggesting variable obstruction . If it same through out lung field suspect other causes especially large air way obstruction.

Crackles are heard in bronchiolitis and in asthma , hence cannot be used to rule out asthma.

3. CVS rule out congenital heart disease
4. Skin for atopy
5. Nose Polyps in cystic fibrosis

## 3. Radiological Examination

1. For new onset wheeze, X -ray chest can be done. Look for generalised hyper inflation, atelectasis, mediastinal masses , enlarged lymphnodes , heart size .
2. CT chest, MRI and barium swallow for diagnosis of tracheobronchmalcia and vascular rings

## Other investigations

1. Spirometry generally not done under five years
2. Skin prick test and specific IgE for aeroallergens can aid the diagnosis of atopy in children above three years. Not routinely done in India.

## Treatment of Wheeze under 5 yrs

Intermittent or episodic wheezing of any severity may represent an isolated viral-induced wheezing episode, an episode of seasonal or allergen-induced asthma, or unrecognized uncontrolled asthma.

1.The initial treatment of wheezing is identical for all of these. A short acting beta agonist every 4–6 hours as needed until symptoms disappear, usually within 1 to 7 days.

Note : The first episode of viral wheeze especially under 2years may be bronchiolitis hence to be treated as per guidelines

(IAP suggests adrenaline nebulisation 0.1 – 0.3ml/kg 1.1000 adrenaline dilution in 3ml NS 4-6hrly. Alternative Nebulised hypertonic saline 3% Nacl 4ml Nebulisation. SABA does not help.

## 2.Oral glucocorticoids

Reserved for wheezing infants thought to have atopy risk factors for asthma and wheeze refractory to other medication (IAP 2018).

## 3. Intermittent high dose ICS From UpToDate

a) Can be considered in episodic wheezing where SABA is not providing relief

Budesonide Nebulisation for ~7-10days

Dose 0-4years (0.5mg – 1mg in a single or two divided dose - Max daily dose 1.25 to 2mg

**Note: In severe cases algorithm as for acute exacerbation of asthma may have to be followed.**

## 4. Controller Therapy

If respiratory symptoms are uncontrolled and wheezing episodes are frequent (3 or more in a season or occurrence every 6-8weeks) a trial of controller therapy with inhaled corticosteroids to be considered

Budesonide by MDI 100mcg BD or Nebulised Budesonide (0.25 to 0.5mg once daily or two divided doses) for three months

Inhaler device for children 5years and younger

| Age | Preferred device | Alt Device |
|---|---|---|
| 0-3years | MDI +Spacer + Mask | Nebulizer with face mask |
| 4-5years | MDI Spacer + Mouth piece or mask | Nebuliser with face mask or mouth piece. |

**Next issue of Mediquest**

**Diagnosis and Management of Asthma under 5 years**

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Age is just a number for **Dr N.Nagajothi** Consultant Physician in **BRS HOSPITAL** who has pursued his interest in horse riding at 74 years of age. He is the senior most rider in Chennai Equitation Centre (Located in Old Mahabalipuram Road). After joining in 2020, he has made great strides and within a year was able to win medals.

Here we see him in action and securing the first place in the show jumping competition. He says he was motivated by his grandson to take up the equestrian sport. Your achievements sir, are sure to inspire others to pursue hobbies and sports to provide us a welcome relief from our routine clinical work.

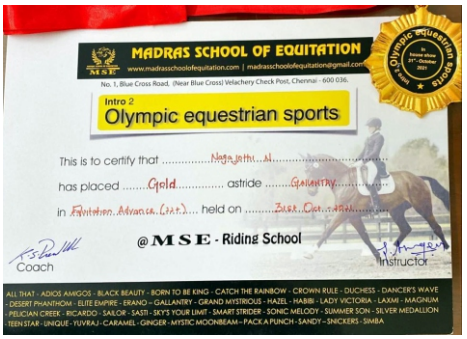
THE HINDU
METROPLUS

A stable LIFE

Equestrian sports now draw more riders of all ages, inspired by young city students recently winning National medals, and a pandemic

A mane influence

Both CEC and MSE, over the years have had students who started learning as early as five and continued to do so for over a decade or even more. "Our oldest rider is 74-year-old Dr Nagajothi," says Prem. He adds, "Often, it is the bond with the horse that draws the rider for a session of riding everyday. There are regulars who reach here at 5.30 am six days a week to practise horse riding."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