Postal Registration No. TN/CH/(C/59/2020 - 2022
Registered News Paper Posted at Egmore R.MS. Patirika Channel.
Licensed to post without prepayment TN/PMG/(CCR)/WPP.500/2020 - 2022

RNI NUMBER : TNENG/2004/14197

RDISNo. 6342/98

Medi Quest BRS Hospital

A monthly News letter from BRS Hospital

CHRONIC COUGH IN CHILDREN CAUSES AND EVALUATION

(Part - I)

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Price Rs. 5/- Only

January - 2020

Medi - 25

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Chronic cough —

Chronic cough in children aged 14 years and younger is typically defined as a cough lasting more than four weeks.

Most cough is of pulmonary origin

Dry Cough vs Wet Cough
Specific Cough vs Non Specific Cough

1.One of the most important and discriminating pointers in evaluation of Chronic cough is the presence of wet / productive cough or Dry cough

A chronic wet cough signifies the presence of airway secretions, and in most cases airway infection, and should not be ignored in children.

2.Specific cough —

Specific cough refers to a chronic cough that is ultimately attributable to an underlying abnormality or disease

These include symptoms such as wet cough or wheeze; timing, such as onset in neonatal period; associated conditions, such as failure to thrive or digital clubbing; abnormalities on chest radiograph or spirometry classically recognizable cough sounds (eg, brassy or croup-like). Many of these pointers are easily recognizable and are strong predictors of a specific cause.

A specific cause of cough is very unlikely if no pointers are found on the initial evaluation.

3.Nonspecific cough —

Conversely, "nonspecific" cough is defined as a chronic cough that does **not** have an identifiable cause, after a reasonable evaluation including history, physical examination, radiography, and spirometry.

A chronic cough is likely to be nonspecific if it is dry and there are no abnormalities identified on initial evaluation (ie, no "specific cough pointers".)

This type of cough usually resolves gradually, but children should be reevaluated periodically for the emergence of signs or symptoms of specific cough.

In some cases, nonspecific cough may represent a post viral syndrome.

OVERVIEW OF CAUSES IN CHILDREN

Pulmonary Causes The three most common causes of chronic cough in children

1. Asthma,
2. Protracted bacterial bronchitis (PBB),
3. Nonspecific cough that resolves spontaneously,

Other Causes

4. Aspiration
5. GE Reflux Disease
6. Chronic Pneumonia
7. Inhaled Retained Foreign Body
8. Eosinophilic Lung disease
9. Environmental Pollutants
10. Post Infectious Cough
11. Space occupying lesions

1.Asthma

Respiratory symptoms –

The cough associated with asthma is typically dry Typically, in asthma there are associated symptoms of wheezing, exertional dyspnea, or atopy, Asthma in the absence of any of these symptoms, sometimes termed "cough-dominant asthma," or "cough-variant asthma" may present as an apparently nonspecific cough. Most studies have suggested that this is an uncommon cause of cough in children

•History –

Clues to the presence of asthma include a history of eczema, rhinitis, or bronchiolitis. A family history of atopy or asthma is common. In addition, a history of wheeze and paroxysmal cough (that responds to bronchodilators) may be reported

•Evaluation –

Initial evaluation of any child with chronic cough includes a chest radiograph and spirometry (if the child is able). The presence of bilateral hyperinflation on chest radiograph is often, although not always, indicative of asthma. In addition, changes within the right middle lobe are seen in children with asthma.

Spirometry (generally performed in children aged >6 years) that shows an obstructive pattern on the flow volume loop, which reverses with bronchodilators, indicates obstructive airway disease, most commonly asthma.

If the initial evaluation suggests a provisional diagnosis of asthma, the next step is a trial of asthma medications (empiric trial of bronchodilators [short-acting beta-2 agonists] and low-dose inhaled corticosteroids) for two to four weeks, followed by reevaluation.

A clear response to this therapy strongly supports the diagnosis of asthma, but does not fully establish the diagnosis, because nonspecific cough unrelated to asthma frequently resolves spontaneously.

Therefore, asthma medication should not be continued unless the diagnosis of asthma can be made with confidence. Lack of response to asthma medications generally is sufficient to exclude asthma.

2.Protracted bacterial bronchitis —

PBB is one of the most common causes of chronic wet cough, particularly in young children (<5 years of age). Identification and treatment of PBB is important because, if untreated, it may be a precursor to bronchiectasis

Diagnosis —

PBB is usually diagnosed based on clinical criteria:

- Chronic wet cough (duration at least four weeks)
- No other symptoms or signs of other causes
- No evidence of an alternative diagnosis after a standard evaluation (including normal spirometry and normal radiograph, other than bilateral peri bronchial accentuation)
- Resolution of the cough after a two-week course of appropriate antibiotics

PBB is caused by typical respiratory pathogens, such as *H. influenzae*, *Streptococcus pneumoniae*, and *Moraxella catarrhalis*. Bronchoscopy is not required for the diagnosis but, if performed, reveals mucopurulent discharge in the bronchi.

3.Nonspecific cough —

Nonspecific" cough is defined as a chronic cough that does **not** have an identifiable cause, after a reasonable evaluation including history, physical examination, radiography, and spirometry.

A chronic cough is likely to be nonspecific if it is dry and there are no abnormalities identified on initial evaluation (ie, no "specific cough pointers").

This type of cough usually resolves gradually, but children should be reevaluated periodically for the emergence of signs or symptoms of specific cough.
In some cases, nonspecific cough may represent a post viral syndrome.

4. Aspiration —

Chronic or recurrent aspiration is an uncommon but important cause of chronic cough. It may be due to a primary swallowing dysfunction or secondary to disorders such as gastroesophageal reflux or achalasia. Other risk factors for aspiration include neurologic and anatomic airway abnormalities (eg, laryngeal cleft or tracheoesophageal fistula). Some individuals with these disorders have a history of feeding difficulties or coughing during feeding.

5. Gastroesophageal reflux disease

(GERD) and upper airway cough syndrome (formerly known as postnasal drip syndrome) are thought to be common causes of chronic cough in adults but are probably not common causes in children. *Adult cough guidelines have suggested empirical treatment of asthma, GERD, and upper airway cough syndrome (UACS) because these are the most common causes in this population.* By contrast, pediatric guidelines do not recommend empiric therapy, although adolescents 15 years and older may be managed using guidelines for adults.

6. Chronic pneumonia —

In areas in which tuberculosis (TB) is endemic, it is a common cause of chronic cough in children and adults.

Investigations such as bronchoscopy, BAL, and chest CT are warranted if atypical chronic infection is suspected.

In young infants, infections with *Chlamydia trachomatis*, cytomegalovirus, or other agents may cause a chronic pneumonia, sometimes known as "afebrile pneumonia of infancy."

To be continued

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Registered News Paper Posted at Egmore R.MS. Patirika Channel.
Postal Registration No. TN/CH/(c)/59/2017-19
RNI NUMBER : TNENG/2004/14197
RDISNo. 6342/98

Owned and Published by Dr. Madhusudhan 28, Cathedral Garden Road,Chennai - 34.
Printed by S. Baktha at Dhevi Suganth Printers 52, Jani Batcha Lane, Royapettah, Chennai -14.
Publication on : Final Week of Every month Posted on 29.01.2020