

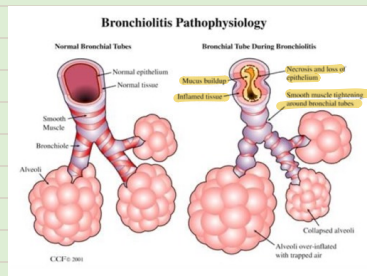
Bronchiolitis.

- * acute
- * usually viral
- * seasonal (Nov-April)
- * MCC of LRTI in 1st year.
- * highly contagious
- * $\leftrightarrow$ direct contact with
 - nasal secretions
 - airborne droplets
 - fomites.

* self limiting.

RSV $\rightarrow$ A more severe dis
 $\rightarrow$ B
 - more severe than others.
 - with rhinovirus more severe dis.

* previous infection $\Rightarrow$ no immunity
 $\Rightarrow$ Reinfection is common



Infants $\rightarrow$ small bronchi
 insufficient collateral ventilation
 high closing volume
 - more likely blocked by secretion & constriction
 - less ability to respond to clay infection

* infection $\rightarrow$ bronchiolar injury $\rightarrow$ $\rightarrow$ mucous
 18-24 hr
 Bronchiole obstruction $\rightarrow$ Hyperinflation
 alveolar death. $\rightarrow$ Tracheal resistance
 atelectasis
 V/P mismatching

RF :-

- age < 3ms.
- Low birth weight $\rightarrow$ premature.
- Low socioeconomic group.
- Childcare center
- Parental smoking
- Chronic lung dis $\rightarrow$ bronchopulm. dysplasia.
- Cong. Heart dis
- Immune deficiency $\rightarrow$ acquired
- Airway anomalies.

Clinical presentation:-

- ① S & of URTI 2-3 days $\rightarrow$ irritability, difficulty feeding, nasal congestion
- ② S & of LRTI 3-4 days $\rightarrow$ Peak cough, dyspnea, wheezing, tachypnea, retractions, grunting.

Diagnosis $\Rightarrow$ Clinically.

- images? $\rightarrow$ chest x-ray $\rightarrow$ pneumonia
 Lab test? $\rightarrow$ viral culture
 * PCR
 * urine culture. * $\rightarrow$ CNA $\rightarrow$ URTI
 - persistently focal cough
 - T > 29 despite antipyretics
 - severe or worsening dis.

* age < 6ms $\rightarrow$ apnea

* require ICU $\rightarrow$ $\rightarrow$ preterm
 * with apnea
 * low birth weight.
 * RR > 70/min

Management

Supportive $\rightarrow$ $\rightarrow$ O₂
 saline nose drops & suctioning
 adequate hydration
 antipyretics.

prevention :-

- good hygiene
- during RSV season

Palivizumab
 every month
 5 months max

Vaccines

Nirxomab $\rightarrow$ $\rightarrow$ $\rightarrow$ $\rightarrow$
 Adult RSV vaccine
 Alisertiv $\rightarrow$ $\rightarrow$ $\rightarrow$

Table 1. Viruses Detected in Nasopharyngeal Secretions from Hospitalized Children with Bronchiolitis.*

Virus	Type	Approximate Frequency %	Seasonality in North America
Respiratory syncytial virus	A and B	50-80	November through April
Human rhinovirus	Groups A, B, and C; >100 serotypes	5-25	Peak activity in spring and autumn
Parainfluenza virus	Type 3 most common, followed by types 1, 2, and 4	5-25	Type 3 is most prominent during spring, summer, and fall in odd-numbered years
Human metapneumovirus	Subgroups A and B	5-10	Late winter and early spring; season typically peaks 1-2 mo later than RSV peak
Coronavirus	OC43, 229E, NL63, and HKU1	5-10	Winter and spring
Adenovirus	>50 serotypes	5-10	Year-round, although season for certain serotypes may be more restricted
Influenza virus	A and B	1-5	November through April
Enterovirus	Echovirus and coxsackievirus	1-5	Generally June through October

Bronchiolitis severity classification

Mild disease	- Infant is alert/active - Feeding well - None to minimal intercostal retractions - Respiratory rate normal to mildly elevated (<60 breaths/minute)
Moderate disease	- Infant is alert/able to be consoled - Feeding decreased - Mild to moderate intercostal retractions - Respiratory rate mildly to moderately elevated (50-70 breaths/minute)
Severe disease	- Infant is less difficult to console - Feeding absent - Moderate to severe intercostal retractions - Respiratory rate moderately to severely elevated (>70 breaths/minute)

Adapted from Schulz L, Lavin A, Allen L et al. Evaluation of the utility of radiography in acute bronchiolitis. *Pediatr*. 2007;120:2429-33.

TABLE 2
 Indications for Hospitalization in Bronchiolitis Caused by RSV

- Age less than three months - Gestational age at birth of less than 34 weeks - Cardiopulmonary disease or immunodeficiency - Respiratory rate higher than 70 breaths per minute - Urgent age appearance - Wheezing and respiratory distress associated with oxygen saturation below 92 percent on room air - Hypoxemia - Apnea or consolidation on chest radiography	RSV = respiratory syncytial virus.
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Recurrent wheezing in children

- 1/3 of preschool age children
- cause significant morbidity.

Common in early life.

- Episodic
- viral induced

Wheezes (S) Stridor (P)
 lower airways upper airways
 high pitched loud harsh.
 expiration. inspiration.

[persistent] → more likely in :-

- children for mother with asthma
- ↑ serum IgE → 1st year 6th year
- normal lung function test → 1st year diminished → 6th year

[Transient] more likely in :-

- children for smoker mother
- ↓ airway function → 1st year 6th year
- didn't have ↑ serum IgE or skin test reactivity.

Pathophysiology :-

- anatomical (narrow airway)
- Genetic (atopy family Hx)
- Environment (tobacco exposure)
- Immunological.
- Airway obstruction

Investigation :-

- Clinical Dx. unless recurrent persistent
- Chest x-ray
 - Chest CT
 - IF atopic

CBC allergy skin test IgE levels

- Immunoglobulin assay
- Barium swallow
- sweat chloride test
- Bronchoscopy.

Treatment :-

- Bronchodilators (short acting B2 agonist)

- Inhaled steroids

✓ in persistent & late onset wheeze

- Systemic steroids

✓ in acute wheezy episodes

- Antileukotrienes (Montelukast)

✓ viral wheezy safe like

- Antibiotics

- Antihistamines

DIFFERENTIAL DIAGNOSIS

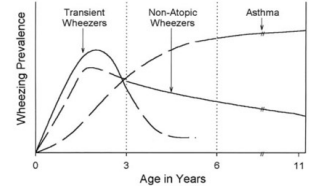
Table 1

Causes of wheezing in children.

Anatomical	Tracheoesophageal fistula or malacia Airway compression (e.g., caused by a vascular ring, bronchogenic cyst, cystic lung over inflation, and diaphragmatic hernia)
Host defense defects	Cystic fibrosis, primary ciliary dyskinesia, and defects in immunity
Perinatal syndromes	Bronchiolitis, protracted bacterial bronchitis
Recurrent aspiration	Gastroesophageal reflux disease
Perinatal disorders	Disorders of swallowing: neuromuscular disease or mechanical disorders
Other causes	Chronic lung disease/bronchopulmonary dysplasia Foreign body aspiration, mediastinal mass, or metabolic diseases

*Common.

PROGNOSIS



Asthma Predictive Index

• In past 12 months, [4 wheezing episodes (>24h), at least 1 is physician-confirmed, PLUS

- | | | |
|--|----|---|
| 1 Major Criterion | OR | 2 Minor Criteria |
| • Parent with asthma | | • Wheezing apart from colds |
| • Atopic dermatitis | | • Eosinophilia (≥ 4%) |
| • Allergic sensitization to (≥) aeroallergens* | | • Allergic sensitization to milk, egg, or peanuts |

*House dust mite, cockroach, dog, cat, mold, grass, tree, and weed

Gordon-Brookes et al. Am J Respir Crit Care Med. 2004;169:1454. Gordon et al. Clinical Chest Med. 2003;23:515. Gordon et al. J Allergy Clin Immunol. 2004;114:1242-1247.