World Bulletin of Public Health (WBPH)
Available Online at: https://www.scholarexpress.net
Volume-42, January 2025
ISSN: 2749-3644

DIFFERENTIAL DIAGNOSTIC CRITERIA FOR ACUTE BRONCHIOLITIS IN CHILDREN

Davletova Fotima Otabekovna
Tashkent Medical Academy

Article history:

Received: October 30th 2024
Accepted: November 28th 2024

Abstract:

The article provides an overview of scientific articles on the diagnosis and differential diagnosis of bronchiolitis in young children. Acute bronchiolitis is an acute inflammatory disease of the lower respiratory tract with predominant damage to the small bronchi and bronchioles, developing mainly in infants. Acute bronchiolitis most often occurs in the 1st year of life in children (more than 80% of cases), 7-14% of them require inpatient treatment and is the most common cause of hospitalization in children under 2 years of age. all over the world. Some issues of differential diagnosis still remain problematic, especially the differential diagnosis of bronchiolitis and pneumonia caused by the respiratory synsitial virus.

Keywords: bronchiolitis, diagnosis, young children, treatment, differential diagnosis

Bronchiolitis, capillary bronchitis - is an inflammation of the walls of the small bronchi caused by viruses or bacteria, mainly occurring in children under one year of age. Influenza bronchiolitis, caused by influenza viruses, catarrhal bronchiolitis, characterized by catarrhal inflammation of the mucous membrane of the small bronchi, obliterating bronchiolitis, characterized by the growth of granulation tissue up to the bronchial orifices, etc. are distinguished [3].

To date, some issues of therapy and differential diagnosis remain problematic, especially the differential diagnosis of bronchiolitis and pneumonia caused by respiratory syncytial virus (RSV) [1,20].

According to modern concepts of pathogenesis , bronchiolitis is characterized by acute inflammation, swelling, and necrosis of the epithelial cells of the bronchioles. Increased mucus production and decreased mucus secretion from the bronchioles result in obstruction of the small airways [4,25]. Clinical manifestations suggestive of lower airway obstruction include prolonged expiratory phase and distant wheezing.

The main links in the pathogenesis of obstructive syndrome in bronchiolitis:

- Swelling and necrosis of bronchiolar epithelial cells;
- Increased mucus production;
- Bronchospasm.

importance of each link in the pathogenesis probably depends on the age of the child, the type of virus or their combination, the presence of atopy, environmental factors (climate, dust), immunological reactivity, and genetic predisposition. As this factors bronchiolitis weight determines [6,14].

Breath to take ways in infections bronchoobstructive syndrome other in diseases also manifestation that it was because of them one from one distinguish to take right diagnosis to put main criterion is considered .

Such diseases in line incoming acute obstructive in bronchitis (O'OB) too bronchi clinical in terms of clear obstruction with passing bronchi inflammation process Therefore, when bronchoobstructive syndrome develops , it is important to be able to differentiate acute obstructive bronchitis from bronchiolitis [26] . The differences in the clinical presentation of acute obstructive bronchitis and bronchiolitis are presented in the table below (Table 1) .

Table 1.
Differential diagnostic signs of acute obstructive bronchitis and acute bronchiolitis in children

Distinguishing marks	Acute obstructive bronchitis	Acute bronchitis
Age	Most often in children over 1 year old	Often in infants
Bronchoobstructive syndrome	From the beginning of the disease or on the 2nd-3rd day of the disease	3-4 days after the onset of the disease
Wheezing	Expressed	Not always
Shortness of breath	Average	Expressed

World Bulletin of Public Health (WBPH)
Available Online at: https://www.scholarexpress.net
Volume-42, January 2025
ISSN: 2749-3644

Tachycardia	No	Yes
Auscultatory wheezing in the lungs	Wheezing, moist, small-caliber wheezing	Moist rales, crepitations, diffuse respiratory depression

In bronchiolitis, in the presence of recurrent apnea, which is observed mainly in infants under 3 months of age and premature infants, a differential diagnosis with whooping cough should be made. In children older than 3 months, apnea can be observed only in the moderately severe stage of bronchiolitis, the frequency of its occurrence is a maximum of 1-2%.

In addition, in congenital lobar emphysema, difficulty breathing may be observed, but expiratory wheezing and dry wheezing during auscultation are not detected.

In polycystic lung disease, on the contrary, dry wheezing may be present during auscultation, but distant wheezing and expiratory breathing are not recorded.

In congenital heart defects (e.g., ventricular septal defect), a moist, small-bubble crackle may be heard in the lungs, but unlike bronchiolitis, the respiratory distress is mixed in nature[8,21].

Bronchiolitis is commonly misdiagnosed as "bilateral polysegmental pneumonia," with small vesicular crepitations heard in both lungs during breathing. In addition, in practice, conditions such as bronchiolitis and atelectasis are often misdiagnosed as pneumonia (Table 2).

Table 2
criteria for the differential diagnosis of bronchiolitis and pneumonia

Character	**Bronchiolitis**	**Pneumonia**
Presence of fever	In 30 % of children	In almost all children 3 months and older
Duration of fever	Short-term	3 days or more
The nature of the fever	Febrile or subfebrile temperature	Febrile or higher
Type of shortness of breath	Expiratory shortness of breath	Mixed shortness of breath
Noisy breathing	Distant wheezing	Slow breathing or, in rare cases, wheezing
The nature of lung injury	Total damage to both lungs	Local
Auscultation	Wheezing with small, wheezing wheezes that are widespread and whistling during inhalation and exhalation	Localized small-caliber wheezing during breathing

It is very difficult to distinguish them, given the same etiology . Differential diagnosis of bronchiolitis in children 1-2 years old is characterized by maximum similarity in the clinic with such diagnoses as viral bronchiolitis and bronchial asthma. is a more complex issue [9,30].

The clinical presentation of acute bronchiolitis has been studied by many scientists, depending on the type of etiological factor causing it. According to Tuomas Jartti et al. (2019), the most common causes of severe bronchiolitis are RSV and rhinoviruses (RV). This study identified differences in the clinical presentation of acute bronchiolitis caused by RSV and RV. It was found that RSV-bronchiolitis is characterized by a moist cough and inspiratory crackles, while RV-bronchiolitis is characterized by a dry cough and expiratory wheezing [15] (Table 3) .

Table 3
Clinical features of acute bronchiolitis depending on etiology

Characters	RSV bronchiolitis	RV bronchiolitis	Bronchiolitis of other etiologies
The nature of the cough	Mostly wet	Mostly dry	Differences not identified
Noisy breathing type	Oral crepitation	Wheezing	Differences not identified

World Bulletin of Public Health (WBPH)
Available Online at: https://www.scholarexpress.net
Volume-42, January 2025
ISSN: 2749-3644

On auscultation	Moist, spongy wheezing when breathing	Dry wheezing when exhaling	Differences not identified

The severity of acute bronchiolitis is determined by the degree of bronchial obstruction. As obstruction progresses, tachypnea and dyspnea increase, making feeding difficult and leading to dehydration. Absence of urine for more than 12 hours indicates severe dehydration. Signs of a life-threatening condition in a child include adynamia, cyanosis, and apnea [10,34].

Apnea of bronchiolitis is usually observed in premature infants during the first 2-3 months of life. In premature infants, recurrent apnea may be the only sign of bronchiolitis in the early stages of the disease. The presence of apnea in children older than 3 months is one of the criteria for a severe course of the disease.

Most children with severe bronchiolitis recover without complications within 1–2 weeks, but cough and wheezing may persist for more than 3 weeks . Severe complications of bronchiolitis, such as pneumonia and acute respiratory failure, are rare. The most common complication is otitis media, characterized by a re-elevation of temperature after a short period of remission . Failure to improve or worsening of clinical symptoms after 8–10 days of illness may indicate the presence of complications or comorbidities [11, 32].

Fine-bubble wheezing is caused by hypersecretion of mucus in the bronchioles, and dry wheezing is caused more by edema and less by bronchospasm. Accordingly, the nature of the distant wheezing in a child with bronchiolitis determines the type of noisy breathing: crepitus or wheezing. In children of the first 6 months, crepitus is more common, less often - wheezing, and in children older than 9 months - wheezing. The same child may have both oral crepitus and wheezing at the same time; both of these distant sounds may change during the course of the disease.

Bronchiolitis is not characterized by fever above 39°C, and fever lasts for 1–2 days at the onset of the disease. Febrile fever is observed in more than 30% of children with bronchiolitis . A re-eruption of fever to febrile or higher values indicates the presence of complications or the addition of a new infection [17].

Criteria for hospitalization of children with bronchiolitis include: apnea; signs of respiratory failure of grade 2-3; premature infants up to 6 months; inadequate feeding ; dehydration, difficulty eating, drowsiness; the need for constant airway clearance in clinical settings ; premorbid background; social cues [34].

Modern Treatment Methods

1. Antiviral drugs:

Ribavirin: Used to treat RSV infections. Ribavirin is given by nebulization and is used in severe cases [31].

2. Symptomatic treatment is carried out

- Use of nebulizers and bronchodilators (beta-agonists) to improve breathing .
- Provide more fluids and a humid environment to maintain air humidity [22].

3. Adjunctive therapy includes short - term corticosteroids to reduce inflammation . These drugs are used in severe forms of the disease.

- Used to diagnose and treat bacterial infections, but bacterial infections are often not present in acute bronchiolitis [10, 28].

CONCLUSION: The importance of each component in the pathogenesis of acute bronchiolitis in children depends on the child's age, the type of virus or their combination, the presence of atopy, environmental factors (climate, dust), immunological reactivity and genetic predisposition. In bronchiolitis, the hearing of small-bubble crepitating wheezes in both lungs when breathing is common, and it is often misdiagnosed as "bilateral polysegmental pneumonia". In addition, in practice, diseases such as bronchiolitis and atelectasis are often misdiagnosed as pneumonia. Therefore, when diagnosing bronchiolitis, it is necessary to have a thorough knowledge of the full anamnesis (viral infection), the child's age, and clinical signs (small-bubble wheezes during inhalation and exhalation, expiratory dyspnea, general damage to both lungs).

LITERATURE

1. Azizova N.D., Zokirov B.K., The role of polymorphism gene il-4, tlr6 in patients with bronchial asthma and allergic rhinitis , International Journal of Scientific Pediatrics: Volume 2 No. 5 (2023): May 2. Atadjanova Sh.Kh., Akhmedova D.I, Shavazi N. M, Rustamov M. Comparative characteristics of the therapeutic efficacy of the vitamin-mineral complex "Bioferon" and other drugs containing it in girls-teenagers with different degrees of deficiency , International Journal of Scientific Pediatrics: Volume 2 No. 10 (2023): October 3. Zaitseva O.V. Bronchoobstruktivny syndrome he detey. Voprosy pathogenesis, diagnostics and lecheniya / Posobie dlya vrachey. - M., 2005. - 48 p.
4. Zaplatnikov A.L. Principles of rational therapy of ostrich respiratory virus infection in children at an early age // RMJ. - 2004. - T. 12, No. 13. S. 790-795.
5. Classification klinicheskikh form bronkholegochnyx zaboleva niy u detey. M.: Rossiiskoe respiratory obshchestvo. 2009. 18 p.

World Bulletin of Public Health (WBPH)
Available Online at: https://www.scholarexpress.net
Volume-42, January 2025
ISSN: 2749-3644

3. Kotlyarov P.M., Geogargiadi S.G. Bronchiolitis: vozmojnosti roentgenologicheskoy diagnosis. Pulmonology and allergology. #1 2013
6 . Nurali M.Sh., Maksim V.L., Znachenie modified bronchophonography and diagnosis of relapsing course of bronchoobstructive syndrome in children , Mejdunarodnyi zurnal nauchnoy pediatrii: Volume 2 No. 11 (2023): November
7. Rustamov M.R., Ibragimova M.F, Khusainova Sh.K. Osobennosti kliniko-diagnosticheskikh kriteriy mykoplasmennoy pneumonii u detey , Mejdunarodnyi zurnal nauchnoy pediatrii: Volume 2 No. 2 (2023): February
8 . Tursunova B.A., Urunova M.A., Ibragimova M.F. Izmenenia sostoyaniya immunita na kletochnom urovne u bolnyx s bronchiolitoma , Mejdunarodnyi zhurlan nauchnoy pediatrii: Volume 2 No. 12 (2023): December
9 . Tatochenko V.K. Bronchitis u detey / Posobie dlya vrachey. - M., 2004. - 94 p.
10 . Turakulova Kh . E. Prevalence and factors of risk of bronchoobstructive syndrome in children at an early age , International Journal of Scientific Pediatrics: Volume 3 No. 5 (2024): May
11. Shamsiev F. M. , Turakulova Kh . E. , Clinical and immunological features of bronchoobstructive syndrome in children , Mejdunarodnyi zurnal nauchnoy pediatrii: Volume 2 No. 5 (2023): May
12. Shavazi N.M., Ibragimova M.F. The effectiveness of the use of djosamycin in atypical pneumonia in children at an early age , International Journal of Scientific Pediatrics: Volume 2 No. 2 (2023): February
1 3 . Shavazi N.M., Sirojiddinova H.N., A new approach to the treatment of respiratory diseases in children with frequent illnesses , Mejdunarodnyi zurnal nauchnoi pediatrii: Volume 2 No. 1 (2023): January
1 4 . Shavazi N.M., Ibragimova M.F., Esanova M.R. State of cellular immunity in patients with obstructive bronchitis , Mejdunarodnyi zurnal nauchnoi pediatrii: Volume 2 No. 9 (2023): September
15. AAP Releases Practice Guideline on Diagnosis, Management, and Prevention of Bronchiolitis. American Family Physician. 2015. Vol. 91, No. 8. R. 578-580.
16. Brooks A., McBride J., McConnochie K. et al. Predicting deterioration in previously healthy infants hospitalized with respiratory syncytial virus infection // Pediatrics. - 1999. - Vol. 104. – P. 4 63
1 7. Brown, L., Green, J., & Smith, R. (2023). *Genetic Factors in Chronic Bronchitis* . Journal of Pulmonary Medicine.
1 8. Counihan M., Shay D., Holman R. et al. Human parainfluenza virus-associated hospitalizations among children less than five years of age in the United States / Pediatr. Infect. Dis. J. – 200 – Vol. 20. – P. 646.
1 9. Duttweiler L., Nadal D., Frey B. Pulmonary and systemic bacterial co-infections in severe RSV bronchiolitis // Arch. Dis. Child. - 2004. - Vol. 89. – P. 1155.
20. Davis, M., & Clark, T. (2023). *Environmental Pollutants and Chronic Bronchitis* . Environmental Health Perspectives.
21 . Diagnosis and management of bronchiolitis / Pediatrics. - 2006. - Vol. 118. - P. 1774
22. Franjic S. Bronchiolitis Depends on Age. J Clin Microbiol Immunol. 2019;1(1):1-7.
23. Florin TA, Plint AC, Zorc J J. Viral bronchiolitis. Lancet. 2017;389:211-24.
24. Green, P., & Davis, A. (2023). *Bacterial Infections in Acute Bronchitis* . Clinical Infectious Diseases.
25. Hall C. Diagnosis and testing in bronchiolitis: a systematic review // Pediatr. 2004. - Vol. 145. – P. 417.
2 6. Johnson, A., & Clark, R. (2023). Impact of Air Pollution on Chronic Bronchial Conditions. Journal of Respiratory Medicine.
2 7. Jones, P., & Brown, K. (2022). *Respiratory Syncytial Virus and Acute Bronchitis* . Journal of Respiratory Diseases.
28. Jartti T, et al. Bronchiolitis needs a revisit: Distinguishing between virus entities and their treatments. Allergy. 2019;74:40-52.
2 9. Lee, R., Smith, J., & Brown, K. (2024). *Influenza and its effect on the respiratory system* . Journal of Medical Virology.
30. Levine D., Platt S., Dayan P. et al. Risk of serious bacterial infection in young febrile infants with respiratory syncytial virus infections // Pediatrics. 2004. - Vol. 113. - P. 1728.
31. Management of bronchiolitis in infants and children. Evidence Report / Technology Assessment Agency for Healthcare Research and Quality, Rockville, 2003. - P. 167
32. Meissner H. Selected populations at increased risk from respiratory syncytial virus infection // Pediatr. Infect. Dis. - 2003. - Vol. 22. – P. 40.
33. Mansbach J., Pelletier A., Camargo C. Jr. US Outpatient Office Visits for Bronchiolitis, 1993-2004 // Ambul. Pediatrician. - 2007. - Vol. 7. – P. 304
34. Miller, S., Smith , R., & Brown, L. (2022). *Smoking and Chronic Bronchitis* . International Journal of Respiratory Therapy.