CLINICAL AND IMMUNOLOGICAL FEATURES OF ACUTE BRONCHIOLITIS IN EARLY CHILDHOOD

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Relevance of the Study

Acute bronchiolitis is one of the most common lower respiratory tract diseases in infants and young children and remains a major cause of pediatric hospitalization worldwide. According to the World Health Organization, respiratory infections account for approximately 15% of deaths among children under five years of age [1]. Viral bronchiolitis, especially caused by respiratory syncytial virus (RSV), is associated with airway inflammation, bronchiolar edema, and impaired gas exchange.

The immature immune system of infants contributes to excessive inflammatory response and rapid progression of respiratory dysfunction. Elevated inflammatory cytokines and oxidative stress play a significant role in the pathogenesis of bronchiolitis. Early identification of clinical and immunological changes is therefore important for improving diagnosis and reducing complications.

Objective

The aim of this study was to evaluate the clinical and immunological characteristics of acute bronchiolitis in early childhood and determine the significance of inflammatory markers in disease severity.

Materials and Methods

The study included 44 children diagnosed with acute bronchiolitis who were hospitalized in the pediatric department of a multidisciplinary clinical center. The mean age of patients was 14.2 ± 5.6 months. Boys accounted for 25 cases (56.8%), while girls represented 19 cases (43.2%).

Clinical evaluation included assessment of respiratory rate, oxygen saturation, body temperature, and severity of respiratory distress. Laboratory investigations included complete blood count, C-reactive protein (CRP), leukocyte count, and serum inflammatory cytokines. Chest auscultation and radiological examination were also performed.

Statistical analysis was conducted using variation statistics and Pearson correlation analysis. Quantitative variables were expressed as mean ± standard deviation (M±SD). Statistical significance was accepted at $p < 0.05$.

Results

The study demonstrated significant inflammatory and respiratory changes in children with acute bronchiolitis. The mean respiratory rate reached 48.6 ± 6.4 breaths per minute, while oxygen saturation decreased to 91.4 ± 2.8%. Fever above 38°C was identified in 63.6% of patients.

Elevated CRP levels were detected in 59.1% of children, with a mean value of 12.8 ± 3.6 mg/L. Leukocytosis was observed in 54.5% of patients. Increased inflammatory markers positively correlated with respiratory distress severity ($r = 0.67$; $p < 0.001$). Wheezing and diffuse bilateral crackles were present in 81.8% of cases. Chest radiography demonstrated hyperinflation and peribronchial thickening in 47.7% of patients.

Children younger than 12 months demonstrated more severe respiratory symptoms and lower oxygen saturation compared to older children. Hospitalization duration averaged 5.6 ± 1.8 days. Complications such as secondary bacterial infection were observed in 13.6% of patients.

Conclusion

Acute bronchiolitis in early childhood is associated with significant inflammatory and respiratory disturbances that may rapidly progress in infants. Elevated inflammatory markers, hypoxemia, and respiratory distress were identified as important indicators of disease severity. The findings demonstrate that early clinical and laboratory assessment is essential for timely management and prevention of severe complications in children with acute bronchiolitis.

REFERENCES

1. World Health Organization. Acute respiratory infections in children. WHO, 2023.
2. Florin T.A., Plint A.C., Zorc J.J. Viral bronchiolitis. *The Lancet*. 2017;389(10065):211–224.
3. Meissner H.C. Viral bronchiolitis in children. *New England Journal of Medicine*. 2016;374(1):62–72.
4. Ralston S.L., et al. Clinical practice guideline: bronchiolitis. *Pediatrics*. 2014;134(5):e1474–e1502.