EDITORIAL

Viral Bronchiolitis in Children: Less is More

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Bronchiolitis is a viral lower respiratory tract infection in infants typically under a year of age clinically diagnosed with symptoms of upper respiratory tract infection progressing onto lower respiratory tract illness with respiratory distress and crackles, wheeze, and crepitation.[1] Most cases are self-limiting and respond to symptomatic care while some would require hospitalization.

The replication of the virus in the respiratory epithelial lining triggers the release of type I and III interferons initially followed by an upregulation of cytokines. The lymphoid cells, granulocytes, dendritic cells, and monocytes are mobilized. This inflammatory response, often unregulated, leads to mucus production, apoptosis, and necrosis of epithelial cells and sloughing. The debris obstructs the small airways and the mucociliary clearance is often hampered.[2] This leads to respiratory distress associated with wheeze or creps and hypoxemia. Radiological investigations may reveal any or all of patchy atelectasis, consolidation, and hyperinflation. As the child coughs and clears the secretions, the symptoms might improve in between. The clinical and radiological signs can vary with these episodes and the signs and symptoms can vary significantly in the same patient between episodes, making it an "intermittent" disease initially.

With molecular diagnostic facilities like nucleic acid amplification test widely and more easily available, the virus can be identified in many cases. Respiratory syncytial virus (RSV) and rhinovirus (RV) are the most common isolates accounting for 50–90% of the cases between them. Coinfection though rare is most commonly with RSV and RV or human metapneumovirus.[1] RSV tends to affect younger children while RV has a tendency to affect toddlers. Some investigators believe that RV could affect children up to 2 years of age and the clinical diagnosis definitions should be modified accordingly.[2] RSV has been studied most extensively and is believed to be responsible for a more severe and prolonged disease course, especially in children with a history of prematurity, chronic lung disease, or cardiac conditions.

Angurana et al. have presented their experience of bronchiolitis over one winter season from November to February at their tertiary referral center.[3] They have looked at the clinical and microbiological profiles of patients in an attempt to find risk factors for intensive care admissions. Of the 173 cases, in 75%, a viral isolate could be identified, 50% due to RSV consistent with the data from India and elsewhere. Clinically, tachypnea and signs of respiratory distress were seen in almost all being the diagnostic features. Median SpO_2 of the cohort was 88% in room air. The predictors of pediatric intensive care unit (PICU) admission on multivariate analysis were predictably underlying comorbidities, presence of chest retractions, respiratory failure at admission, presence of shock, and the need for mechanical ventilation. The virus etiology was not an independent risk factor for ICU admission. The overall mortality was 8.1%.

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Though important data and the authors need to be congratulated for this compilation, we should be cautious in generalizing it. One-third of the patients had coexisting morbidities and more than half were admitted elsewhere before being referred. More than a third required PICU admission with a higher incidence of complications. These reflect a cohort or more sick patients being a referral center. Nevertheless, these findings are important to understand the pattern and clinicomicrobiological profile of bronchiolitis in Northern India.

The current guidelines of various societies do not recommend a routine test for viral identification, as it does not help in clinical management decisions.[4–6] Researchers have studied viral load and looked at genetic predisposition in children with bronchiolitis. Children with higher viral load may have a more severe and prolonged course.[7] Some children may be genetically predisposed to a severe disease or development of asthma later on in life but as of now data are insufficient to identify them.[2]

Treatment of bronchiolitis remains supportive with management of hydration, secretions, and hypoxemia. Being an "intermittent" disease, intermittently the child could appear more unwell. In one study, pulse oximeters were programmed to display 3% higher saturations with a reduction in the need for admission and no difference in the outcomes.[8] The U.S. guidelines suggest an SpO_2 cutoff of 90% for initiating oxygen therapy.[4] The use of heated humidified nasal oxygen has become very popular in recent years primarily because of its ease of use and patient comfort. There could be added advantages of positive end-expiratory pressure and reduced work of breathing. A recent systematic review did not show any advantage of high-flow nasal cannula over standard oxygen therapy or nasal CPAP.[9]

Antibiotics are prescribed mostly in response to the radiological features of the alveolar disease. These changes are misguiding, and routine radiological investigations are not recommended.

Most current guidelines of various societies do not recommend routine viral testing, antibiotics, or blood or radiological testing for patients with bronchiolitis.[4–6] The management is mostly

supportive. Genetics, viral as well as human, may help guide therapy in the future and that remains to be seen.

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