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Case Report

Acute Bronchiolitis in Infancy: Comprehensive Case Report with Evidence-Based Supportive Care

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Abstract

Acute bronchiolitis is a common cause of hospitalization in infants under two years. We see these cases frequently in our practice, as pediatricians. Despite that, guidelines clearly recommend supportive care and to avoid unnecessary pharmacologic treatments. I present here a case of a 5-month-old male infant with moderate-to-severe RSV bronchiolitis. The patient was managed exclusively with supportive care including oxygen supplementation, hydration, and feeding support. This case emphasizes evidence-based management, careful monitoring, and effective parental communication. The infant fully recovered without pharmacologic intervention. The report also reviews epidemiology, pathophysiology, risk factors, clinical management, and preventive measures.

Keywords: *Bronchiolitis; Infant; Respiratory Syncytial Virus; Supportive Care; Pediatrics; Evidence-Based Management*

Introduction

Acute bronchiolitis is a viral lower respiratory tract infection predominantly affecting infants and young children. RSV is the leading causative agent, responsible for 50 - 80% of cases, while other pathogens include rhinovirus, adenovirus, parainfluenza virus, and human metapneumovirus. Globally, bronchiolitis is a major cause of hospitalization in infants under 12 months, particularly during winter months in temperate climates.

Pathophysiologically, viral infection triggers inflammation, edema, and mucus production in the small airways, causing airway obstruction, wheezing, and increased work of breathing. While most cases are mild and self-limiting, certain infants develop moderate-to-severe disease requiring hospitalization. Risk factors include prematurity, congenital heart disease, chronic lung disease, immunodeficiency, and age under 3 months. International guidelines, including those from the American Academy of Pediatrics (AAP) and NICE, emphasize supportive care and minimal interventions, reserving pharmacologic therapy for select cases. Reporting clinically managed cases reinforces adherence to evidence-based practice, reduces overtreatment, and highlights the role of parental counseling.

Case Presentation

A 5-month-old male infant presented to the emergency department with progressive respiratory distress and poor feeding. He had a 5-day history of upper respiratory tract symptoms, beginning with rhinorrhea and nasal congestion, followed by cough and low-grade fever (maximum 38.2°C). In the 24 hours before presentation, parents noted increased work of breathing, chest retractions, irritability, and reduced oral intake and urine output. There was no history of apnea, cyanosis, vomiting, seizures, or choking episodes.

Past medical and family history

The infant was born at term via normal vaginal delivery with no complications. Growth and developmental milestones were appropriate for age. Immunizations were up to date. There was no chronic lung disease, congenital heart disease, or prior hospitalizations. Family history was unremarkable; however, an older sibling attending daycare had recently experienced a mild upper respiratory tract infection.

Social and environmental context

The family live in a well aerated house and there was no smoking exposure. Daycare attendance of the sibling increased the risk of viral transmission. Parents were attentive and sought care promptly upon noticing respiratory distress.

Clinical examination

On examination, the infant appeared irritable but alert. Vital signs: temperature 38°C, heart rate 160 bpm, respiratory rate 60/min, oxygen saturation 89% on room air. Respiratory assessment revealed nasal flaring, intercostal and subcostal retractions, diffuse bilateral wheezing, and prolonged expiratory phase. Cardiovascular, abdominal, and neurological examinations were unremarkable.

Differential diagnosis

Differential diagnoses considered included:

- Acute bronchiolitis (most likely)
- Community-acquired pneumonia
- Congestive heart failure
- Aspiration pneumonia
- Early-onset asthma (less likely at this age).

Clinical features, age, and history supported acute viral bronchiolitis.

Investigations

Laboratory and imaging investigations were limited according to guidelines. CBC showed mild lymphocytosis; C-reactive protein was normal. Nasopharyngeal swab tested positive for RSV. Chest radiograph revealed hyperinflated lungs with perihilar markings. Further investigations were deemed unnecessary.

Management

Management focused on supportive care, consistent with current evidence-based guidelines. The infant received:

- Supplemental oxygen via nasal cannula to maintain $SpO_2 \geq 92\%$.
- Nasal saline drops with gentle suctioning.
- Enteral feeding via nasogastric tube due to poor oral intake.
- Continuous monitoring of oxygen saturation, hydration, and respiratory status.

No bronchodilators, corticosteroids, or antibiotics were administered.

Hospital course

The patient's clinical status improved gradually over 5 days.

Hospital Day	Oxygen Requirement	Feeding Status	Clinical Notes
Day 1	2 L/min NC	NG feeds only	Moderate respiratory distress, chest retractions
Day 2	1 L/min NC	Partial oral feeding	Reduced retractions, improved oxygen saturation
Day 3	0.5 L/min NC	Mostly oral feeds	Minimal distress, alert and responsive
Day 4	Room air	Full oral feeding	Stable, improved vitals
Day 5	Room air	Full oral feeding	Discharged home, stable condition

Table

Follow-up

At 1-week post-discharge, the infant remained well with normal feeding and growth, no respiratory distress, and parents reported adherence to home monitoring instructions.

Discussion

Evidence-based management

Bronchiolitis is primarily diagnosed clinically. International guidelines emphasize supportive care, including oxygen therapy, hydration support, and airway clearance. Pharmacologic interventions, such as bronchodilators, corticosteroids, and antibiotics, have not demonstrated consistent benefits. This case demonstrates that even moderate-severe cases can recover with observation and supportive measures.

Parental counseling

Effective communication with caregivers is crucial. Education regarding disease course, warning signs, and home supportive measures reduces anxiety and improves compliance. Parents were instructed on signs requiring urgent care, such as worsening respiratory distress, apnea, or cyanosis.

Risk factors and predictors of severity

Severe bronchiolitis is more likely in infants < 3 months, preterm infants, those with chronic cardiopulmonary disease, or immunodeficiency. Our patient had none of these risk factors, contributing to a favorable outcome.

Preventive measures and future directions

Preventive strategies include palivizumab prophylaxis for high-risk infants and rigorous hand hygiene. RSV vaccine research is ongoing and holds promise for broader prevention. This emphasizes the need for public health measures alongside clinical management.

Key learning points

- Acute bronchiolitis is predominantly a clinical diagnosis.
- Supportive care is the mainstay of treatment; unnecessary pharmacologic interventions should be avoided.
- Careful monitoring and oxygen support are sufficient for most hospitalized infants.
- Parental counseling and education are essential components of management.
- Awareness of risk factors for severe disease aids in triage and monitoring.

Conclusion

This case highlights that even moderate-to-severe RSV bronchiolitis can be effectively managed with supportive care alone. Adherence to evidence-based guidelines, careful monitoring, and clear communication with caregivers optimize outcomes and reduce unnecessary interventions [1-10].

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