Review of ASCENIV in Two Young Males with Immune Abnormalities and RSV-Induced Respiratory Failure: A Case Series

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Background

• Respiratory syncytial virus (RSV) can cause severe respiratory disease in young children.
• Intravenous immunoglobin (IvIg) has been utilized as part of the acute treatment in immunocompromised individuals
• ASCENIV is a novel IvIg subtype with high-titer neutralizing anti-RSV antibodies (1.9-fold higher compared to conventional IvIg) [1-2].
• It is enriched with antibodies to several other viral pathogens and approved for adults and adolescents ≥12 years with primary immunodeficiency (PI).
• The safety and efficacy of ASCENIV has not been well studied under 3 years of age [3-4].

Methods

• Chart review on two previously healthy children ≤ 3 years of age who suffered from severe courses of RSV bronchiolitis.
• Both patients required mechanical ventilation in the pediatric intensive care unit (PICU) setting, were diagnosed with immune abnormalities, and received one dose of ASCENIV at 0.5g/kg.

Discussion

• The severity of RSV/multi-viral bronchiolitis raised concern for contributing immune dysregulation.
• ASCENIV (0.5g/kg) may have had notable benefit in the treatment courses of this less well studied age-cohort of patients.
• Regarding safety, there were no adverse side effects associated with ASCENIV administration.
• Further analysis of the benefits of ASCENIV for patients younger than 3 years of age with immune dysregulation should continue to be explored.

Patient 1: Clinical Course

Day 1: 12-month-old male with +RSV, intubated and admitted to PICU

Immune work-up revealed hypogammaglobulinemia and pathologic mutation in TNFRS13B*

Day 9: Remains mechanically ventilated

Day 10: Administration of **ASCENIV** (0.5 g/kg)

Extubated and weaned to room air

Day 14: discharged from hospital

*TNFRS13B is associated with autosomal recessive common variable immunodeficiency (CVID) [5]

Patient 2: Clinical Course

Day 1: 15-month-old male with +RSV, rhino/entervirus intubated and admitted to PICU

Day 2: Initiation of high-dose IV steroids

Day 6: Initiation of High frequency oscillatory ventilation (HFOV) and nitric oxide

Day 8: Immune work-up with T-cell lymphopenia (CD3- 607/ CD4- 322 cells/µL) and absent pneumococcal titers

Day 17: Progressive T-cell decline (CD3- 306/ CD4- 132 cells/µL)

Day 18: Administration of **conventional IvIg** (0.5 g/kg)

Day 19: Slight clinical improvement, continued viral positivity

Day 21: Administration of **ASCENIV** (0.5 g/kg)

Day 23: Transitioned off HFOV

Day 28: Complete viral clearance

RSV positive → RSV negative

References

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