Persistent Burkholderia cepacia Bacteremia During Prolonged ECMO in an Infant with Suspected Primary Immunodeficiency: A Multidisciplinary Therapeutic Challenge

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Background: Burkholderia cepacia complex is an opportunistic multidrug-resistant pathogen associated with high morbidity in critically ill and immunocompromised patients. Persistent bacteremia during extracorporeal membrane oxygenation (ECMO) is uncommon and poses major therapeutic challenges because of biofilm formation, altered antimicrobial pharmacokinetics, especially in patients with underlying immune dysfunction.

Objectives: To describe the successful management of persistent B. cepacia bacteremia during prolonged ECMO support in an infant with severe viral acute respiratory distress syndrome and primary immunodeficiency.

Methods: Retrospective case report.

Results: A 1-year-old boy with severe viral ARDS complicated by septic shock and refractory respiratory failure required ECMO support. He received 14 days of VA-ECMO followed by 83 days of VV-ECMO after hemodynamic recovery. BAL cultures initially grew *B. cepacia* and *Enterobacter hormaechei*; after antibiotics were stopped for 21 days, he developed persistent *B. cepacia* bacteremia, which resolved with combination therapy including meropenem, ceftazidime-avibactam, levofloxacin, trimethoprim-sulfamethoxazole, and inhaled tobramycin. Genetic testing revealed a heterozygous *TNFRSF13B* variant associated with common variable immunodeficiency, prompting weekly immunoglobulin replacement. He was successfully decannulated after 97 ECMO days and discharged home without end-organ dysfunction.

Conclusion: Persistent B. cepacia bacteremia during prolonged ECMO is rare but can be successfully treated through aggressive source control, optimized combination antimicrobial therapy, and evaluation for underlying immunodeficiency. This case highlights the importance of a multidisciplinary approach to overcoming one of the most challenging infectious complications encountered during prolonged extracorporeal support.

References:

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