State of the Globe: Deciphering the Puzzle of Cerebral Malaria in Children

Cerebral malaria (CM) represents one of the most severe complications of *Plasmodium falciparum* infection, particularly affecting the pediatric population in malaria-endemic regions.[1] Understanding the clinical and laboratory manifestations of CM in children is crucial for timely diagnosis, appropriate management, and improved outcomes.

CM in pediatric patients often presents with a broad spectrum of clinical manifestations, ranging from nonspecific symptoms to severe neurological impairment.[2] Fever, typically accompanied by other constitutional symptoms such as malaise and fatigue, is a common initial presentation.[3] As the disease progresses, children may develop neurological symptoms, including altered mental status, confusion, seizures, and coma. Neurological examination may reveal signs of meningeal irritation, focal neurological deficits, and signs of increased intracranial pressure. Recognizing the evolving clinical features of CM in pediatric patients is essential for early intervention and improved outcomes.

Laboratory investigations play a vital role in supporting the diagnosis and management of CM in pediatric patients. Blood tests commonly reveal thrombocytopenia, anemia, and elevated lactate levels, reflecting the systemic inflammatory response, and microvascular sequestration of infected red blood cells. Peripheral blood smears or rapid diagnostic tests are used to detect malaria parasites, although parasitemia levels may not always correlate with disease severity.[4] Importantly, cerebrospinal fluid analysis may demonstrate elevated protein levels and pleocytosis, indicating central nervous system involvement. In addition, neuroimaging studies, such as computed tomography or magnetic resonance imaging, may reveal cerebral edema, infarctions, or hemorrhages, further elucidating the pathophysiology of CM in pediatric patients.[5]

Diagnosing CM in pediatric patients can be challenging due to overlapping clinical features with other febrile illnesses and limitations of diagnostic tests, particularly in resource-limited settings. Prompt initiation of antimalarial therapy, typically with parenteral artesunate or quinine, is crucial to reduce mortality and morbidity. However, managing complications such as seizures, metabolic disturbances, and cerebral edema requires a multidisciplinary approach and close monitoring in the pediatric intensive care unit. In settings with limited resources, optimizing supportive care interventions, including fluid resuscitation, oxygen therapy, and management of seizures, can significantly impact outcomes in pediatric patients with CM.

Advancing our understanding of the clinical and laboratory manifestations of CM in pediatric patients requires ongoing research efforts and collaboration among clinicians, researchers, and public health experts. Future studies exploring biomarkers of disease severity, novel diagnostic tools, and targeted therapeutic interventions hold promise for improving outcomes in pediatric patients with CM. In addition, strengthening health-care systems in malaria-endemic regions and implementing preventive measures, such as vector control strategies and vaccination programs, are essential for reducing the burden of CM in vulnerable pediatric populations.

Jegede *et al*. in their study published in the current issue have tried to characterize CM's clinical and laboratory features in children aged 6 months to 14 years.[6] Among 64 participants, fever (96.9%) and convulsions (92.2%) were the most prominent symptoms. Profound coma occurred in 12.5% of cases, with fever (84.4%) and pallor (75.0%) being predominant signs. Metabolic acidosis (47.9%), severe anemia (14.1%), and funduscopic abnormalities (48.4%) were also observed.[6] The authors concluded that early recognition and management of CM symptoms are crucial for better outcomes.

Insights into the clinical and laboratory manifestations of CM in pediatric patients are essential for guiding early diagnosis, appropriate management, and improved outcomes. By recognizing the diverse clinical presentations, interpreting laboratory findings, and addressing diagnostic and management challenges, health-care providers can optimize care delivery for pediatric patients with CM. Collaborative research efforts and public health interventions are critical for mitigating the impact of CM on pediatric populations and advancing global efforts toward malaria elimination.

Research quality and ethics statement

The authors followed applicable EQUATOR Network (https://www.equator-network.org/) guidelines, notably the CARE guideline, during the conduct of this report.

Rohit Kumar Varshney

Department of Emergency Medicine, Kalyan Singh Government Medical College, Bulandshahr, Uttar Pradesh, India

Address for correspondence: Dr. Rohit Kumar Varshney, Kalyan Singh Government Medical College, Bulandshahr, Uttar Pradesh, India.
E-mail: rohitmaxy@gmail.com

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