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Commentary

Antimalarial Medications for Severe Malaria: Current Guidelines and Clinical Practices

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DESCRIPTION

Severe malaria, primarily caused by *Plasmodium falciparum*, remains a significant global health challenge. It is characterized by life-threatening complications such as cerebral malaria, severe anemia and organ dysfunction. While advancements in diagnostics and treatment have reduced malaria-related mortality, severe cases still account for hundreds of thousands of deaths annually, particularly in sub-Saharan Africa and Southeast Asia. Effective management of severe malaria hinges on the timely administration of appropriate antimalarial medications in accordance with current guidelines. This study analyzes the clinical features of severe malaria, the antimalarial medications used in its management and the latest guidelines and best practices in clinical settings.

Clinical features of severe malaria

Severe malaria is defined by the presence of one or more life-threatening complications, including cerebral malaria impaired consciousness or seizures. Severe anemia hemoglobin levels below 5 g/dL. Metabolic acidosis leading to respiratory distress. Blood glucose levels below 2.2 mmol/L (40 mg/dL). Acute kidney injury, pulmonary edema, or liver dysfunction. Parasitemia exceeding 10% of red blood cells. Rapid diagnosis using microscopic examination or rapid diagnostic tests (RDTs) is important to confirm *Plasmodium* infection and initiate treatment promptly. The WHO recommends intravenous (IV) artesunate as the first-line treatment for severe malaria due to its rapid action and superior efficacy compared to quinine. Artesunate, a derivative of artemisinin, works by generating reactive oxygen species that damage the parasite's cellular components.

Clinical practices in severe malaria management

Quinine, once the gold standard for severe malaria, is now considered a second-line option due to its slower action and potential side effects, such as hypoglycemia and cardiotoxicity. Dosage and administration adults and Children 20 mg/kg body weight IV loading dose, followed by 10 mg/kg every 8 hours until oral therapy is possible. Narrow therapeutic index requiring careful monitoring. Higher incidence of adverse effects compared to artesunate. Adjunctive Therapies in addition to antimalarial medications, supportive care is important for managing complications are to control fever, for severe anemia, to address dehydration and prevent fluid overload. For seizure control in cerebral malaria. The WHO provides comprehensive guidelines for managing severe malaria, emphasizing prompt diagnosis use RDTs or microscopy to confirm malaria and assess severity. Parenteral Treatment initiate IV artesunate immediately for all severe cases. Regularly monitor vital signs, blood glucose and renal function. Transition to ACTs as soon as clinically appropriate. Guidelines may vary based on local drug availability and resistance patterns. In areas where artemisinin resistance is documented, triple-drug therapies combining ACTs with a third agent are under investigation. In resource-limited settings, rectal artesunate may be used as a pre-referral treatment for severe malaria. Delayed treatment is a major contributor to poor outcomes in severe malaria. Healthcare providers must prioritize early recognition of symptoms and immediate initiation of IV artesunate. Patients with severe malaria require close monitoring to detect and manage complications such as hemodynamic instability regular blood pressure monitoring. Electrolyte imbalances correct abnormalities to prevent cardiac and neurological complications. Monitor urine output and consider dialysis if necessary. The emergence of artemisinin resistance in the Greater Mekong Subregion highlights the need for vigilant monitoring and adherence to treatment guidelines. Resistance management strategies include rotating ACTs to minimize selective pressure. Using combination therapies with novel antimalarial agents.

Challenges and future directions

In many malaria-endemic regions, access to IV artesunate remains limited due to supply chain issues and high costs. Expanding production and ensuring equitable distribution are important to addressing this gap. The rise of artemisinin

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resistance underscores the need for strong surveillance systems. Investment in molecular tools and regional collaboration can enhance resistance tracking. Developing novel antimalarial drugs and improving existing therapies are essential to counteract resistance and ensure effective treatment options. While not a replacement for treatment, vaccines such as RTS, S can complement antimalarial therapies by reducing infection rates and alleviating the burden on healthcare systems. Severe malaria requires prompt and effective management to prevent complications and reduce mortality. Intravenous artesunate remains the fundamental of treatment, supported by timely transition to oral ACTs and comprehensive supportive care. Adherence to WHO guidelines and proactive measures to combat resistance are vital for sustaining progress in malaria control. By tackling challenges such as limited drug access and resistance, the global community can work towards a future where severe malaria is no longer a significant public health threat.