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The clinical spectrum of severe childhood malaria in Eastern Uganda

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Abstract

Background: Few recent descriptions of severe childhood malaria have been published from high-transmission regions. In the current study, the clinical epidemiology of severe malaria in Mbale, Eastern Uganda, is described, where the entomological inoculation rate exceeds 100 infective bites per year.

Methods: A prospective descriptive study was conducted to determine the prevalence, clinical spectrum and outcome of severe *Plasmodium falciparum* malaria at Mbale Regional Referral Hospital in Eastern Uganda. All children aged 2 months–12 years who presented on Mondays to Fridays between 8.00 am and 5.00 pm from 5th May 2011 until 30th April 2012 were screened for parasitaemia. Clinical and laboratory data were then collected from all *P. falciparum* positive children with features of WHO-defined severe malaria by use of a standardized proforma.

Results: A total of 10 208 children were screened of which 6582 (64%) had a positive blood film. Of these children, 662 (10%) had clinical features of severe malaria and were consented for the current study. Respiratory distress was the most common severity feature (554; 83.7%), while 365/585 (62.4%) had hyperparasitaemia, 177/662 (26.7%) had clinical jaundice, 169 (25.5%) had severe anaemia, 134/660 (20.2%) had hyperlactataemia (lactate $\geq$ 5 mmol/L), 93 (14.0%) had passed dark red or black urine, 52 (7.9%) had impaired consciousness and 49/662 (7.4%) had hypoxaemia (oxygen saturations < 90%). In-hospital mortality was 63/662 (9.5%) overall but was higher in children with either cerebral malaria (33.3%) or severe anaemia (19.5%). Factors that were independently associated with mortality on multivariate analysis included severe anaemia [odds ratio (OR) 5.36; 2.16–1.32; $P = 0.0002$], hyperlactataemia (OR 3.66; 1.72–7.80; $P = 0.001$), hypoxaemia (OR) 3.64 (95% CI 1.39–9.52; $P = 0.008$), and hepatomegaly (OR 2.29; 1.29–4.06; $P = 0.004$). No independent association was found between mortality and either coma or hyperparasitaemia.

Conclusions: Severe childhood malaria remains common in Eastern Uganda where it continues to be associated with high mortality. An unusually high proportion of children with severe malaria had jaundice or gave a history of having recently passed dark red or black urine, an issue worthy of further investigation.

Keywords: Severe malaria, Severe anaemia, Dark red or black urine, *P. falciparum* malaria, Children, Uganda

Background

Despite the recent control strategies of national and international communities, *Plasmodium falciparum* malaria remains a major cause of morbidity and mortality in tropical countries, especially within the WHO Africa Region which accounts for the majority of cases worldwide [1]. According to the latest World Health

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