

Plasma Plasmodium falciparum Histidine-Rich Protein-2 Concentrations Are Associated with Malaria Severity and Mortality in Tanzanian Children

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Abstract

Plasma Plasmodium falciparum histidine-rich protein-2 (PfHRP-2) concentrations, a measure of parasite biomass, have been correlated with malaria severity in adults, but not yet in children. We measured plasma PfHRP-2 in Tanzanian children with uncomplicated ($n = 61$) and cerebral malaria ($n = 45$; 7 deaths). Median plasma PfHRP-2 concentrations were higher in cerebral malaria (1008 [IQR 342–2572] ng/mL) than in uncomplicated malaria (465 [IQR 36–1426] ng/mL; $p = 0.017$). In cerebral malaria, natural log plasma PfHRP-2 was associated with coma depth ($r = 0.42$; $p = 0.006$) and mortality (OR: 3.0 [95% CI 1.03–8.76]; $p = 0.04$). In this relatively small cohort study in a mesoendemic transmission area of Africa, plasma PfHRP-2 was associated with pediatric malaria severity and mortality. Further studies among children in areas of Africa with higher malaria transmission and among children with different clinical manifestations of severe malaria will help determine the wider utility of quantitative PfHRP-2 as a measure of parasite biomass and prognosis in sub-Saharan Africa.