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Increased circulating interleukin (IL)-23 in children with malarial anemia: in vivo and in vitro relationship with co-regulatory cytokines IL-12 and IL-10.

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Source

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Abstract

Severe malarial anemia (SMA) is a leading cause of mortality among children in sub-Saharan Africa. Although the novel cytokine, interleukin (IL)-23, promotes anemia in chronic inflammatory diseases, the role of IL-23 in SMA remains undefined. Since IL-23 and IL-12 share the IL-12p40 subunit and IL-12Rbeta1 receptor, and are down-regulated by IL-10, relationships among these cytokines were explored in Kenyan children with varying severities of malarial anemia. Children with malarial anemia had increased circulating IL-23 and IL-10 and decreased IL-12 relative to healthy controls. Enhanced anemia severity and elevated parasitemia were associated with increased IL-10 relative to IL-23 and IL-12. Further exploration of the relationships among the cytokines using an in vitro model in which peripheral blood mononuclear cells were treated with synthetic hemozoin (sHz, malarial pigment) revealed that IL-12p35 and IL-23p19 transcripts had a sustained induction over 72 h, while IL-12p40 and IL-10 message peaked at 24 h, and rapidly declined thereafter. Taken together, results here show that IL-23 is elevated in children with malarial anemia, and that IL-10 and IL-12 appear to have important regulatory effects on IL-23 production during childhood malaria.