Studies of epidemiology and immune parameters of individuals co-infected with schistosomiasis and malaria have suggested strong support for involvement of both diseases in increasing morbidity and pathology of either disease. This has been attributed to shifts in the T regulatory cell (Treg) populations and Programmed Cell Death-1 (PD-1) expression on T cells, which are the indicators of immunoregulation in parasitic infections, leading to further dampening of the specific immune response to either of the disease. There is however a fundamental lack of understanding of the total mechanisms by which malaria infection interacts with the host immune system in S. mansoni infection. This study aimed at investigating the effects of falciparum malaria on levels of expression of T-regulatory subsets in pre-teen school children in Asembo Rarieda division infected with Schistosoma mansoni. The effects of intensity of infection with Schistosoma mansoni on expression of Treg and PD-1 subsets, and the differences in expression of T cell subsets - CD3, CD4 and CD25 in schistosomiasis mansoni single infection and schistosomiasis mansoni co-infection with P. falciparum were investigated. Four-color flow cytometric immunophenotyping of T-lymphocytes was performed using combinations of monoclonal antibodies directly conjugated to fluorescein isothiocyanate (FITC), phycoerythrin (PE) and allophycocyanin (APC). The intensity of schistosome infection had no influence on expression of both Treg (p = 0.7629) and PD-1 (p = 0.2355), or effector T cell activation (CD3+/CD4+/CD25med/HLA-DR+) (r = -0.04524; p = 0.5787). There was also no significant difference in the mean percentage expression of CD3+ T cells (73.7%) in S. mansoni single infection and S. mansoni and malaria co-infection (76.1%) (p=0.1572). Similarly, no significant statistical difference was found in either the mean percentage expression of CD4+ T cells in S. mansoni single infection (55.4%) and S. mansoni and malaria co-infection (55.4%) (p=0.9958) or in the Treg (CD3+/CD4+/CD25hi). The mean percentage expression of CD3+/CD4+/CD25hi was 1.57 in S. mansoni single infection and 1.67 in S. mansoni and malaria co-infection (p=0.5125). Children with Schistosoma mansoni and P. falciparum malaria however showed significantly reduced expression of activated T cells (CD3+/CD4+/CD25med/HLA-DR+) (p=0.0173). Similarly, expression of Treg cell with memory (CD3+/CD4+/CD25hi/CD45RO) was significantly lower in children with S. mansoni and P. falciparum double infections compared to those with S. mansoni infection alone (p=0.003). Thus schistosomiasis and malaria have deleterious effects on the host, both as single infections or double infections. These findings suggest that parasitic diseases such as schistosomiasis and malaria that often co-exist together have major effects on development of immunity to either of them and that control of schistosomiasis may have additional benefits with respect to the malaria epidemic in Sub-Saharan Africa. Hence integrated control of parasitic diseases is the way forward.

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