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Editorial Open Access

# Female Genital Schistosomiasis: A Neglected Tropical Disease Infecting Women of Reproductive Age in Endemic Areas

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## Editorial

Schistosomiasis (bilharzia) is a neglected tropical disease caused by trematode parasitic worms of the genus *Schistosoma*. Approximately 207 million persons are infected with schistosomiasis worldwide [1]. Female genital schistosomiasis (FGS) is characterized by the presence of schistosome eggs/worms in the upper or lower genital tract.

Several studies have shown that FGS is a common manifestation in S. haematobium infection, with prevalence rate ranging from 30% to 75% in some communities [2,3]. Other studies have indicated that schistosome ova deposition may be the cause of genital papillomatous tumours, leukoplakia, polyps, and ulcers similar to sexually transmitted diseases (STD) [4,5]. Pregnant or lactating women infected with schistosomiasis in endemic areas, may be complicated further by malnutrition and low immunity resulting in more pathology related to liver and kidney function. Despite the potentially enormous at-risk population, little is known about the schistosome-specific morbidities that are experienced by pregnant and lactating mothers and their newborns [6]. Apparently, the patho-physiological changes that occur, have not been fully investigated in women of reproductive age residing in schistosomiasis endemic areas, in the context of treatment alogrithms for administration of praziquantel in pregnant women, especially in sub-Saharan Africa.

Anaemia in schistosomiasis infection is the result of blood loss caused by schistosome eggs penetrating the walls of the blood vessels. Pregnant women are at special risk of anaemia due to increased iron requirement during pregnancy, short birth intervals (blood loss) and prolonged lactation (iron loss), especially when combined with parasitic and helminthic infection may lead to iron and/or folate deficiency [7]. Studies have shown that a strong relationship between anaemia and schistosomiasis exists even after controlling for other co-infections and dietary factors among pregnant women and children, [8]. The underlying mechanisms proposed range from social determinants to complex immune interactions [9,10]. This indicates that there are many underlying factors that may compound the anaemia (low Hb) in pregnant women in Schistosomiasis endemic areas.

Studies from Kenya, Niger, Tanzania, and elsewhere have shown that, despite the presence of confounding factors, haemoglobin levels of children and pregnant women correlate negatively with egg count in both *S. mansoni* and *S. haematobium* [9-12].

In areas where parasitic diseases are common, as is the situation in large parts of sub-Saharan Africa, these are often the cause of eosinphilia in endemic areas thus, schistosomiasis is no exception. Eosinophil activation generally occurs in inflamed tissues [13] but circulating eosinophils from helminth-infected individuals exhibit an activated phenotype, suggesting that parasite infection may up regulate eosinophil function [14]. In *S. haematobium* infections in humans, this is reflected by the cellular composition in the urine where eosinophils constitute a significant proportion of the leukocytes present [15]. A study by Kihara et al. (unpublished report) showed there is slight elevated eosinophils in circulating blood of women who are infected with *S. haematobium* and equally high in pregnant women than non-pregnant women.

Relatively, few studies have investigated the interactions between schistosomes and elements of host haemostatic defense mechanisms, of which platelets are a significant component (Nurden, 1980). Reduction in circulating platelet numbers occurs about 2 days after percutaneous infection of mice with *S. mansoni cercariae*. This is approximately the time at which some schistosomulae would be expected to be entering the blood system of the host (Wilson and Lawson, 1980). In a study by Kihara et al. (unpublished), there were decreased levels of thrombocytes (platelets) (thrombopenia) among pregnant women infected with *S. haematobium*, than non-pregnant infected women. It was then hypothesized that, and as has been shown by other researchers, these decreased platelets may be associated with *S. haematobium* infection, despite lack of a larger comparative data in the study. Further research may reveal the pertinent innate immune activity of platelet in the defense mechanism of schistosomiasis infection.

Schistosomiasis is a neglected tropical disease and, as a result, little attention has been paid to women with FGS. Given the safety, efficacy, and low cost of PZQ, programs are continuing large-scale periodic treatment of at-risk populations without individual diagnosis especially school age children. Special attention must be given to pregnant and lactating women to decrease the disease burden and improve pregnancy and fetal outcomes. Observational results from matched cohorts in Kwale suggest that the benefits of childhood or adolescent treatment for schistosomiasis can persist into adulthood, particularly if the therapy is given into adolescence. If programs can target this population (pregnant women), the likelihood of improving women's reproductive life and well-being will be directly affected [16]. Women of reproductive age spend a very large part of their reproductive lives involved in activities that expose them to schistosomiasis infection and their treatment during MDA will not only improve their health but alleviate the already poor nutritional status. Infected women of reproductive age in endemic areas should be treated during gestation period (after 1st Trimester) to avoid development of serious deleterious conditions later in their parity life.

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