

Schistosomiasis: An Overview of the Burden, and Challenges of these Neglected Tropical Disease, and the Way Forward in North-Western Nigeria

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Abstract

Schistosome or blood flukes are one of the seventeen neglected tropical diseases (NTDs) causing a significant health burden for many countries in the developing world. Many species of schistosome infect human and his livestock but six species account for human disease and cause serious economic hardship among the poor living in rural communities of underdeveloped countries of the world. According to an estimate of the disease epidemiology by the World Health Organization which shows that atleast 235 million cases of schistosomiasis disease burden occur world-wide, with 732 million people at risk of infection and another 200,000 people died each year especially in sub-Saharan Africa where the disease is said to be endemic. Policy decision makers should come up with appropriate preventive and control measures, to curtail the spread and transmission of the disease by creating awareness, strengthening of basic infrastructure and sanitation, to stakeholders involved. Challenge now is for researchers in the field of laboratory diagnosis and management by developing new techniques that are simple, rapid and able to diagnose light infection or improved current methods available.

Keywords: *Schistosomiasis; Disease Burden; Challenges; The Way Forward; North Western Nigeria*

Introduction

Schistosome or blood flukes are one of the seventeen (17), neglected tropical diseases (NTDs) causing a significant health burden for many countries in the developing world [1,2]. Schistosome also cause serious and most prevalent health related parasitic diseases in the subtropical regions of sub-Saharan Africa, including Nigeria [1]. Schistosomes found living in human and animal blood stream causing a disease called schistosomiasis. Many species of schistosome infect human and his livestock but six species account for human disease and cause serious economic hardship among the poor living in rural communities of underdeveloped countries of the world [3]. Exposure to water containing cercariae which is the infective form of the parasites, People became infected as they go about their occupational activities such as fishing, irrigation farming etc. Depending on the specie, the worm becomes mature in the mesenteric vein of the intestine (*Schistosoma mansoni*) or in the urinary bladder as in the case with (*Schistosoma haematobium*). The disease is not cause by the adult worm but rather by the eggs that leave the body by faeces or urine and hatch to liberate miracidium larva which later infects certain types of snail specie [3].

According to an estimate of the disease epidemiology, by the World Health Organization which shows that atleast 235 million cases of schistosomiasis disease burden occur world-wide, with 732 million people at risk of infection and another 200,000 people died each year especially in sub-Saharan Africa where the disease is said to be endemic [4]. Secondly, WHO report in 2007, estimate between 391 and 587 million people are reported to have active cases of schistosomiasis world-wide and between 1.7 to 4.5 million loss per annum of disability adjusted life years are due to schistosomiasis [5,6].

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Schistosomes was reported belonging to the class of trematodes (digenetic) having an intermediate snail host and a definitive vertebrate host. The parasite schistosomes have a basic bilateral symmetry, oral and ventral suckers and a body covered by a syncytial tegument. The digestive system consists of a mouth, an oesophagus and a bifurcated caeca. Majority of Schistosomes have an area between the tegument and alimentary canal filled with a loose network of mesoderm cells. The excretory system of Schistosome parasite is based on flame cells [7,8]. Adult worms of the parasite is said to range in size from 10 to 30 mm in length and between 0.2 to 1 mm in diameter. The Schistosomes are dioecious (sexes are separate), unlike most other trematodes in the group. Schistosome infections was also found to have an indirect consequences on nutrition, growth and physical fitness due to diarrhoea, decreased appetite or loss of nutrients [9].

Currently, among all the drugs tested for Schistosomes, praziquantel is the drug of choice for the treatment of schistosomiasis caused by any of the human schistosome species [10]. According to a research report, it is administered orally at a standard single dose of 40 mg/kg body weight and the drug is well-tolerated in the abdomen, side effects are mild and transient and it can be prescribed to both adults and children's [11]. Praziquantel is extensively metabolized in the liver, yielding mainly monohydroxylated and dihydroxylated phase-I metabolites [12]. The drug has become less costly, and average treatment is now available for less than €0.3, resulting in an easier access of the drug in the developing countries. A single dose of praziquantel is generally sufficient to give cure rates between 60 - 90% and to significantly reduce the average number of excreted eggs [13].

The challenge for researchers in the field of laboratory diagnosis and management of Schistosomiasis who targeted to improve the above mention will be to find away to respond to environmental changes and to the threat of praziquantel resistance [14]. New diagnostic procedures that are simple, rapid, and able to diagnose light infections need further evaluation, as do new drugs that act effectively on both adult and larval Schistosomes, and vaccines that target either the human host or, in the case of *Schistosoma japonicum* and/or *Schistosoma mekongi*, the animal reservoir hosts [12]. An integrated approach to the management of schistosomiasis that offer treatment alongside measures to reduce transmission by snail control, health education and promotion, improved sanitation, and vaccination is the key to sustainable long term control of schistosomiasis.

Conclusion

The burden of Schistosomiasis was extremely high especially in the north-western Nigeria. Policy decision makers should come up with appropriate preventive and control measures, to curtail the spread and transmission of the disease by creating awareness, strengthening of basic infrastructure and sanitation, to stakeholders involved. Another challenge is for researchers in the field of laboratory diagnosis and management by developing new techniques that are simple, rapid and able to diagnose light infection or improved the currently available methods.

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