Schistosomiasis infection: is it really diagnosed?

Schistosomiasis, also known as Bilharziazis, has been and remains one of the most common parasitic diseases worldwide. It affects millions of people in the developing world, mainly in Africa. In 1999, the WHO estimated schistosmiasis as the second most common parasitic infection after malaria in terms of significant economic and public health consequences.

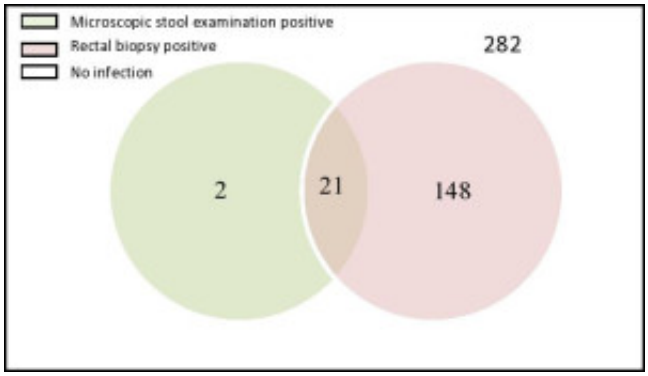

Fig.1. 453 patients had both rectal biopsy and microscopic stool examination. The overall infection positivity was 37.7% (171/453) out of which, only twenty three patients (5%) were positive by stool examination while 169 (37.3%) were positive by rectal biopsy. As noticed, stool examination missed the majority of infected patients 86.5% (148/171).

In 2001, the World Health Assembly adopted a new strategy for schistosomiasis control. It was based on regular large scale patients' treatment programs with praziquantel (the current recommended treatment for schistosomiasis). Many countries benefited from WHO treatment program included Brazil, Burkina Faso, Cambodia, China, Mauritius, Morocco, Oman and Saudi Arabia. Like many other countries, the WHO strategy was endorsed by the Ministry of Health of Egypt. It authorized praziquantel distribution for high risk individuals even prior to laboratory diagnosis. Praziquantel became available for free in almost all primary care units including general practice centers and in cheap prices even over the counter. Media has played a major role in population awareness about the treatment. The outcome seemed to be excellent. In some studies, schistosomiasis infection rate was reduced from 26% in 1996 to 1.9% in 2007.

More recently, however, debates aroused about the long term benefits of such strategy. The main method used to diagnose patients was simple microscopic examination of patient's stool sample for the presence of the parasite eggs. This method has drawbacks in process of diagnosing schistosomiasis mainly due to variability of egg excretion from day to day. In addition, microscopic stool examination was shown to have low credibility in cases with light infection. This obviously can be misleading in evaluation of schistosomiasis control programs. This study was designed to assess the performance of the microscopic stool examination as the most widely used method for

the diagnosis of schistosomaisis infection worldwide. We compared microscopic stool examination against another method of diagnosis called rectal biopsy. In rectal biopsy, a tissue sample is obtained from the rectum after performing a short endoscopy examination of the rectum. The rectal tissue sample is then examined under microscopy for shistosomaisis ova. Despite being more accurate, rectal biopsy is rarely used in routine practice due to patient's discomfort and technical difficulties. In this study, a total of 651 (55 children and 596 adults) individuals, from three most affected governorates in Lower Egypt, were screened for scistosomiasis infection using microscopic stool examination alone, rectal biopsy alone or both tests.

We found that although all patients came from same background, infection detection rates substantially changed according to method of diagnosis. It was significantly low in microscopic stool examination group (9%) compared rectal biopsy group (40.6%). In one group where patient had both microscopic stool examination alone and rectal biopsy, only 23/171 (13.5%) patients were positive by stool examination in contrast to 169/171 (37.3%) patients were positive by rectal biopsy. In this group, microscopic stool examination failed to diagnose 86.5% (148/171) of positive cases detected by rectal biopsy (Fig. 1).

In conclusion, this study showed that infection rates of schistosomiasis can be considerably underestimated. The large treatment scale programs resulted in an era of patients with light infection for which simple microscopic stool examination is ineffective as it can easily miss many cases.

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Publication

Long-term effect of mass chemotherapy of Schistosoma mansoni on infection rate and diagnosis accuracy.
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