

Hope is not lost!

A new, sensitive diagnostic aid for urogenital schistosomiasis.

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Photograph of Nigerian women waiting to give urine samples. (Kindly provided by Olufunmilola Ibrinke).

Urinary schistosomiasis, caused by infection with *Schistosoma haematobium* parasites, remains a prevalent disease throughout Africa, the Middle East and parts of Western Asia. The disease is often chronic, particularly in adults with long-standing infections. This can lead to severe damage of the urogenital organs, and even bladder cancer.

Diagnosis of schistosomiasis haematobium in chronically-infected individuals is challenging since these patients pass few secreted eggs in the urine, on which current “gold-standard” methods rely. An alternative is to look for haematuria, but this is also not perfect in terms of sensitivity and specificity. Indeed, the lack of sensitive diagnostic aids for schistosomiasis is a widely known problem.

Recent studies by Ibrinke *et al.* have worked towards the validation of a new, sensitive diagnostic test for *S. haematobium* infections. They demonstrate that it is possible to detect schistosome species-specific DNA (*Dra1* fragments) in the urine of infected patients, and importantly these can be detected even when eggs are absent from excreta. Their method works by extraction of DNA from filter paper that has been previously soaked with patient urine. This DNA is concentrated and then amplified using PCR.

The authors identify this new diagnostic technique as a particularly valuable tool for diagnosis of chronic *S. haematobium* infections in adults. One of their studies demonstrate that there is an almost two-fold difference in prevalence of *S. haematobium* in adults when comparing egg detection to detection of *Dra1* fragments, showing that use of egg-detection methods is not reliable for these populations.

The efforts of Ibrinke *et al.* in developing this new assay are commendable, and demonstrate that hope for more sensitive and specific diagnostic tools for schistosomiasis is not lost. Their assay has the potential to be very useful for definitive diagnosis of schistosomiasis haematobium in adult populations, particularly those in which severe damage of the bladder is suspected.

In the meantime, mass drug administration (MDA) campaigns will continue to base their strategies on prevalence determined by questionnaires, presence of macrohaematuria and/or parasitological methods. The *Dra1*-detection method isn't likely to be useful in these programmes any time soon due to the costs and difficulties associated with performing PCR in the field. For insensitive parasitology to ever be replaced completely we will need not only a sensitive and specific test, but one that also meets the remaining ‘ASSURED’ criteria.

The ideal diagnostic test- ASSURED criteria

Affordable
Sensitive
Specific
User-friendly
Rapid
Equipment-free
Deliverable

The ‘ASSURED’ criteria as outlined in Mabey *et al.* (2004) *Nature Reviews Microbiology*, **2**, 231-240.

Full text article available at:

<http://www.plosntds.org/article/info%3Adoi%2F10.1371%2Fjournal.pntd.0001464>

Validation of a new test for *Schistosoma haematobium* based on detection of *Dra1* DNA fragments in urine: evaluation through latent class analysis. 2012. Olufunmilola Ibrinke, Artemis Koukounari, Samuel Asaolu, Irini Moustaki, Clive Shiff. *PLoS NTDs*, **6**, e1464.

Previous publication available to subscribers of the American Journal of Tropical Medicine and Hygiene:

<http://www.ajtmh.org/content/84/6/998.abstract>

Diagnosis of *Schistosoma haematobium* by Detection of Specific DNA Fragments from Filtered Urine Samples. 2011. Olufunmilola Ibrinke, Anna Phillips, Amadou Garba, Sani Lamine, Clive Shiff. *Am. J. Trop. Med. Hyg.*, **84**, 998-1001.