Schistosomiasis is first among the most neglected tropical diseases in the world. It kills more than 200 000 people in sub-Saharan Africa annually. It is also known that female genital schistosomiasis is a co-factor in cervical invasive lesions and as an entry-point in HIV acquisition.

Up to 50% of patients newly infected with *Schistosoma haematobium* may remain asymptomatic, a fact rarely appreciated.

Recent information on the geographical distribution of *Schistosoma haematobium* is unavailable, but it is thought that, in addition to the previously described areas in South Africa, foci exist along the Mooi River near Potchefstroom and around Humansdorp in the Eastern Cape. There is no recent information regarding the Vaal and Hartebeespoort dams.

**Microscopy**

In early or light-intensity infections (i.e. low worm burden) the schistosome ova are shed intermittently and in low amounts. Diagnosis may be enhanced by collecting urine between 10 am and 2 pm, when egg excretion is maximal, after first sending the patient to run up and down stairs, if possible. A study in Kenyan schoolchildren indicated that the first urine microscopy specimen picked up 83.3% of infections, while 3 or more (up to 5) urine specimens picked up 96.5% of infections. This study was conducted in a high worm-burden population, thus results may not necessarily be extrapolated to local conditions.

Patients may shed dead eggs for months after receiving adequate treatment.

In low-resource settings, microhaematuria is a good marker for infection with *Schistosoma haematobium*, both pre- and post-treatment, and correlates well with urine microscopy.

**Serology**

Lancet Laboratories uses soluble egg antigen (SEA) in our serological tests; seroconversion usually takes between 6 and 8 weeks, with the majority of patients seroconverting within 3 months following exposure. Prolonged seroconversion periods of up to 6 months have been described.

Specific antibodies can persist despite cure, so serology is less helpful in patients previously treated or repeatedly infected. Serology is therefore diagnostic in travellers or patients from endemic areas not previously treated. Exposure to avian and bovine schistosomes may give false-positive serological results.

It has been shown that antibody titres may increase, decrease or remain unchanged in the first 6 – 12 months post-treatment, regardless of the serological method used. An antibody titre that increases in the first 6 months, or which fails to drop after 3 years does NOT automatically justify re-treatment of the patient. Re-treatment should rather be based on:

a) Symptoms
b) Parasite identification
c) Eosinophilia

**Circulating Cathodic Antigen (CCA)/Circulating Anodic Antigen (CAA)**

These antigens are derived from gut-associated glycoproteins of adult worms. They may be analysed in urine or serum. Reported specificity is only between 50% and 75%. False-negative results are commonly seen, particularly in long-standing infections. Lancet Laboratories do not offer these tests. New point-of-care CCA/CAA assays with significantly improved sensitivity are currently under investigation, but is not yet available for commercial use.
Managing Equivocal Serological Test Results
If there is a positive history of exposure and a strong clinical indication despite equivocal serology, then the patient should be treated.

If serological tests are equivocal and there is more than one of the following findings, then the patient should be treated:

a) Eosinophilia
b) History of haematuria
c) Katayama syndrome (acute schistosomiasis)
d) Fresh-water swimmers’ itch
e) Positive radiographic examination or ultrasound

PCR
Several studies utilising PCR for diagnosis of schistosomiasis are currently under way. It is anticipated that PCR will be particularly useful in the early stages of schistosomiasis. Urine PCR on experimentally inoculated urine specimens showed 99.9% specificity and 94.4% sensitivity. Clinical studies have shown that sensitivity is higher with high-intensity infections (> 50 eggs/10mL urine) than with low-intensity infections (≤ 50 eggs/10mL urine).

Experimentally infected mouse studies as well as a few clinical studies with small patient numbers have suggested that PCR will also be useful as a monitoring tool post-treatment.

There is, however, the theoretical concern that DNA from slowly degenerating eggs in tissues may lead to false-positive PCR results. More understanding is needed of egg clearance post-treatment and its impact on PCR results.

Treatment
The drug of choice for the treatment of urinary schistosomiasis is praziquantel (Biltricide®). It is important to remember that praziquantel kills only the adult worms; immature schistosomes may survive treatment and mature several weeks after treatment. Paradoxically, lightly infected patients may have less robust immune responses, necessitating repeat treatment after 2 to 4 weeks to increase effectiveness.

The safety of praziquantel in children under 4 years of age has not been established (as with pregnant women). The clinician needs to balance the risk of treatment with the risk of disease progression in the absence of treatment. The WHO maintains that there is growing evidence that children as young as 1 year of age can be treated with praziquantel without serious side-effects, however, the praziquantel pills are large and may not be broken or crushed so a choking risk exists.

If the pre-treatment urine was positive for eggs, follow up with repeat urine microscopy at least 2 months after treatment is advised to help confirm successful cure.

References