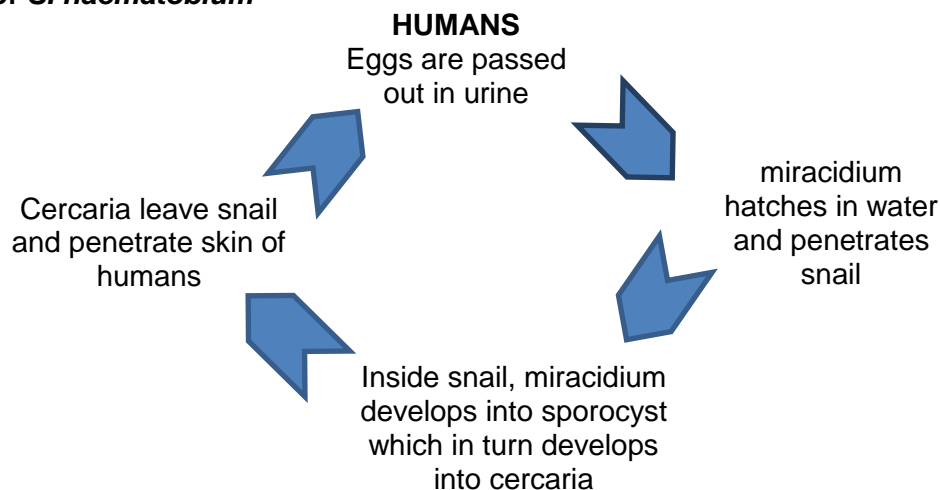


## ***Schistosoma haematobium***

### **Introduction**

Schistosomiasis is a disease caused by blood trematodes belonging to the genus *Schistosoma*. The World Health Organisation estimates that 200-300 million people in 74 countries are affected with the disease and a further 500-600 million are exposed to the risk of infection. It is primarily a rural disease affecting, agricultural communities and fishermen. There are 3 important species which affect man: *Schistosoma mansoni* causes intestinal schistosomiasis and occurs in Africa, Brazil, Venezuela, Malagasy republic, the Arabian peninsula, the West Indies and Surinam; *Schistosoma haematobium* causes urinary schistosomiasis and occurs in Africa and the Middle East; *Schistosoma japonicum* causes intestinal schistosomiasis and occurs in China, Indonesia and the Philippines. The remaining 2 species infecting humans are *Schistosoma intercalatum* found in West and Central Africa and *Schistosoma mekongi* found in the Mekong River Basin.

### **Life cycle of *S. haematobium***



### **Pathogenesis**

The clinical disease is related to the stage of infection, previous host exposure, worm burden and host response. Cercarial dermatitis (Swimmer's Itch) following skin penetration, results in a maculo-papular rash and can last 36 hours or more. The mature flukes of *S. haematobium* migrate to the veins surrounding the bladder. After mating, the eggs are laid in the venules of the bladder and many penetrate through the mucosa, enter the lumen of the bladder and are excreted in the urine accompanied by blood. Thus haematuria and proteinuria are characteristic, though not invariable features of urinary schistosomiasis.

As with all *Schistosoma* species, it is the eggs and not the adult worms which are responsible for the pathology associated with *S. haematobium*. In chronic disease, eggs become trapped in the bladder wall resulting in the formation of granulomata. Following prolonged infection, the ureters may become obstructed and the bladder becomes thickened resulting in abnormal bladder function, urinary infection and kidney damage. Chronic urinary schistosomiasis is associated with squamous cell bladder cancer.

### Laboratory diagnosis

The definitive diagnosis of urinary schistosomiasis is made by finding the characteristic ova of *S. haematobium* in urine. They are relatively large, measuring 110 $\mu$  - 170 $\mu$  in length and 40 $\mu$  - 70 $\mu$  in width. They have an elongated ellipsoid shape with a prominent terminal spine.

Terminal urine should be collected as the terminal drops contain a large proportion of the eggs. The urine can either be centrifuged and the deposit examined microscopically for ova or it can be filtered through a poly carbonate membrane using a nucleopore or a nylon filter, with a pore size of 15 or 20 $\mu$ m.

A bladder biopsy is seldom necessary to make the diagnosis. A rectal snip may show the presence of ova as they sometimes pass into the rectal mucosa.

Serological tests can be of value when eggs cannot be found in clinical samples. An enzyme linked immuno-sorbent assay using soluble egg antigen to detect antischistosome antibody is currently used at the Hospital for Tropical Diseases.



An ovum of *Schistosoma haematobium*