

## Mini Review

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# Female Genital Schistosomiasis: A Neglected Tropical Disease

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## ABSTRACT

Female genital schistosomiasis is a neglected tropical disease. Few clinicians consider it in their differential diagnosis. Yet this disease affects hundreds of millions of people. Hundreds of thousands of them actually die annually. It significantly affects the reproductive health of women. Patients infected in childhood may carry the burden of disease throughout their lives without being detected. Global attention is occupied by new emerging diseases like Zika virus and female genital schistosomiasis is relegated to back of pages in the list of global worries. The importance of this disease on the health of women cannot be over-emphasised. The global attention must be focused so that it can be tackled adequately. Awareness among clinicians must be increased so that they consider it when women present to them with unusual symptomatology. Female genital schistosomiasis is a neglected tropical disease affecting millions of people. It causes significant morbidity and mortality in women. Awareness among clinicians is low as most cases are discovered fortuitously while undergoing investigations for other conditions.

**KEYWORDS:** Female genital schistosomiasis; Neglected disease; Morbidity; Mortality; Life-threatening.

## INTRODUCTION

Schistosomiasis is a neglected tropical disease despite the fact that it affects 200 million people causing profound morbidity and mortality. It is a poverty related problem.<sup>1</sup> Annually more than 200,000 people die from the disease. It is endemic in riverine areas of the world such as Africa, Eastern Mediterranean, Central America, East Asia and the Middle East.<sup>2,3</sup> Travellers to these areas can be affected. The majority of genito-urinary infections are caused by *Schistosoma haematobium*, *Schistosoma japonica* and *Schistosoma mansoni* that is found in Brazil.<sup>4</sup> It is important to bring this topic to global attention as the patients may suffer asymptomatic disease burden.

## PATHOGENESIS

Schistosoma are parasitic trematode blood flukes of the family Schistosomidae affecting the urinary and gastro-intestinal tracts.<sup>2</sup> Humans get infected by getting into contact with infected waters. The eggs of the flukes spread haematogenously, embolising to the liver, spleen lungs and brain. In the genitourinary system in the early stages it primarily involves the bladder and ureters but later the kidneys and genital organs are involved.<sup>3</sup> It rarely infects the colon or the lungs. The ova lodged in the tissues causes a tissue reaction in the genital mucosa.<sup>5</sup>

This article describes the effects of the schistosoma on the female genitourinary system. Ova have been described in the cervix,<sup>6</sup> uterus, fallopian tubes, ovaries and bladder. Ova in the genital mucosa may cause lesions.<sup>7</sup> The lesions seen in infected tissue have been described as circular, reticular, branched, convoluted, granny or sandy areas.<sup>8-10</sup> Lesions that develop in childhood are chronic.

**CLINICAL PRESENTATION**

Female genital schistosomiasis may be asymptomatic. Female genital schistosomiasis may cause abnormal malodorous vaginal discharge, contact bleeding, dysmenorrhoea, menorrhagia<sup>9,11-13</sup> dysuria and haematuria.<sup>3</sup> In the vulva patients may complain of lumps or chronic itching. Patients may present with chronic pelvic pain. These symptoms can occur in sexually transmitted infections, benign and malignancy conditions causing confusion and delayed or misdiagnosis

**ASSOCIATIONS**

Schistosomiasis infection is associated with human papillomavirus and human immunodeficiency virus in causing abnormal Pap smears and cervical cancer.<sup>6,14</sup> Tissue reaction to ova in mucosal lining assists in HIV infection. In a study in Zimbabwe women with genital schistosomiasis had an almost three-fold risk of having HIV infection.<sup>15</sup> Schistosomiasis infection has long been linked to development of squamous cell bladder cancer.<sup>16</sup>

**COMPLICATIONS**

Infected person suffer from chronic anaemia and malnutrition. The complications of this infection include ureteritis, pyelitis and cystitis.<sup>3</sup> There could be calcification, fibrosis and stric-

tures in the urinary system. Genital tract infection may cause chronic pelvic inflammatory disease<sup>17</sup> and subfertility as the ova are lodged in the Fallopian tubes (Figure 1). This can lead to ectopic pregnancies<sup>11,13,18</sup> Ectopic gestations can rupture causing catastrophic bleeding and demise. Neglected tropical diseases like schistosomiasis can have a profound impact on women’s reproductive health. Many cases of unexplained pregnancy losses may be due to undiagnosed neglected tropical diseases.<sup>17</sup> Genital tumours such as ovarian pseudo tumours can occur.<sup>11,19,20</sup> Chronic schistosomiasis infection causes vulval/labial lesions (Figure 2), fibrosis, cervical lesions/dysplasia and organomegaly.<sup>21</sup>

**DIAGNOSIS**

The diagnosis of female genital schistosomiasis can be missed altogether as few clinicians consider it in their day to day work. This is due the fact that is now a neglected disease way down the list of the world attention. The diagnosis is sometimes made fortuitously when investigating the clinician’s usual conditions. Urine dipstick can reveal haematuria. Urine microscopy<sup>22</sup> is the next step in the diagnostic route to do. At times routine Pap smear tests can reveal genital schistosomiasis (Figure 3).<sup>4</sup> Polymerase chain reaction<sup>23</sup> on vaginal lavage samples or urine was found to be a better was to diagnose female urogenital schistosomiasis compared to cytology.<sup>5</sup>

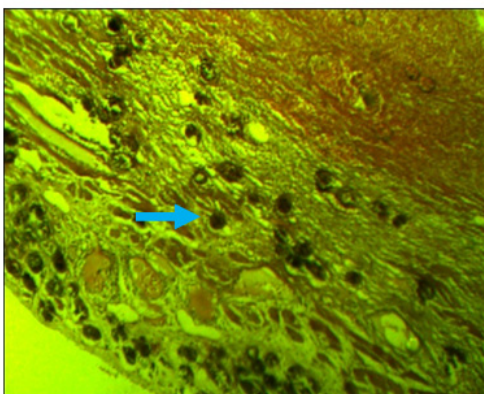


Figure 1: Fallopian tube heavily infected with schistosoma ova.

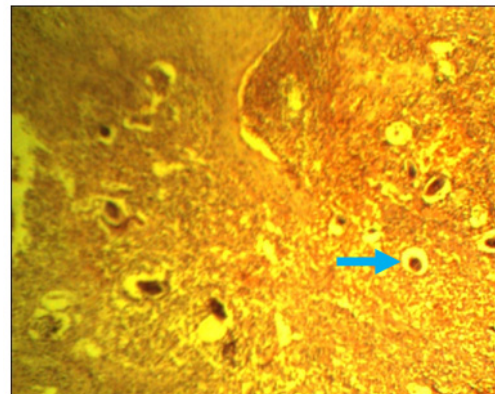


Figure 2: Schistosoma ova in a labial skin biopsy.

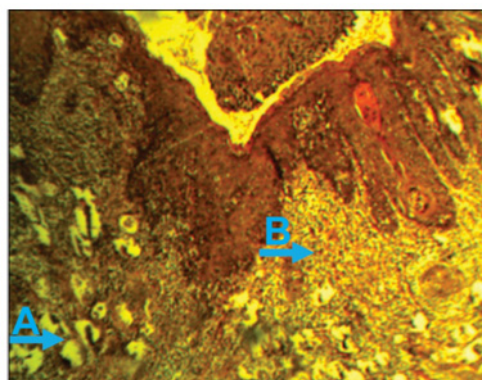


Figure 3: (A) Schistosoma ova and (B) severe cervical dysplasia.

An abdominopelvic x-ray can reveal calcifications. Computed tomography, intravenous urography, computed urography may all reveal bubble-like filling defects representing ova deposited in ureters, kidneys and bladder.<sup>3</sup>

Directed punch biopsies obtained cystoscopically, hysteroscopically and colposcopically sent for histopathological examination can be diagnostic.

#### PREVENTION

Many countries are working towards eliminating the disease by destroying the snail habitat. The provision of clean water reduces schistosome infection. Public health education may reduce disease burden.

#### TREATMENT

The cornerstone of schistosomiasis control is mass single dose praziquantel treatment in high prevalence areas.<sup>24</sup> The adult population is the most important target group. For school-age children, the WHO approves the dose pole for praziquantel dosing based on height. The other drug is oxamniquine but it costs more than praziquantel. The public health importance of female genital disease importance is not adequately addressed.<sup>25</sup>

#### RESEARCH ADVANCES

Recent research into the mechanisms of immune regulation has provided new insight into immune responses to chronic diseases. Studies on host genetics, T-helper cell type 1 or 2 cytokines<sup>26</sup> influencing immunity and granuloma formation have provided relevant information. There is on-going research to develop a schistosome vaccine that will prevent the parasite from completing its life cycle in humans.

#### CONCLUSION

Female genital schistosomiasis is an important, tropical and neglected disease affecting millions of people. Global attention should be brought back so that it is tackled adequately thereby reducing the morbidity and mortality in women. Awareness amongst clinicians must be encouraged so that it is considered in the clinical setting to avoid delayed or misdiagnosis and appropriate chemotherapy given.

#### AUTHOR'S CONTRIBUTION

This is the sole work of Mr. S. Ngwenya.

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