An Update on the Role of Imaging in the Care of Patients with Genitourinary Schistosomiasis: A Systematic Review

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Introduction

- Schistosomiasis is a parasitic trematodiasis caused by *Schistosoma* worms.
- Genitourinary schistosomiasis is caused by *S. haematobium* which is endemic to Africa and the Middle East.
- Chronic infection may lead to severe fibrosis of the urogenital tract and can cause serious lesions in organs like the bladder.
- Previously published guidance underscores the role of imaging as a risk stratification tool for intestinal schistosomiasis.

Objective

To synthesize the available literature regarding the role of imaging in the evaluation of patients with genitourinary schistosomiasis for use of initial risk stratification and management.

Results

- Imaging via ultrasound was able to demonstrate bladder abnormalities in individuals (of all ages) infected with genitourinary schistosomiasis.
- Common abnormalities included: changes in shape, wall irregularities, thickening of the bladder wall, calcification, masses, and polyps.

Methods

- Five databases were searched.
- Terms used in the search strategy were: “schistosomiasis” or “schisto*” AND “haematobium” or “haematob*” AND “CT” or “Computed And tomography” or “ultraso*” or “sonogr*” or “MRI” or “Magnetic AND resonance AND imaging” or “Echo.”
- Screening and data extraction was performed by two reviewers.
- Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) was employed.

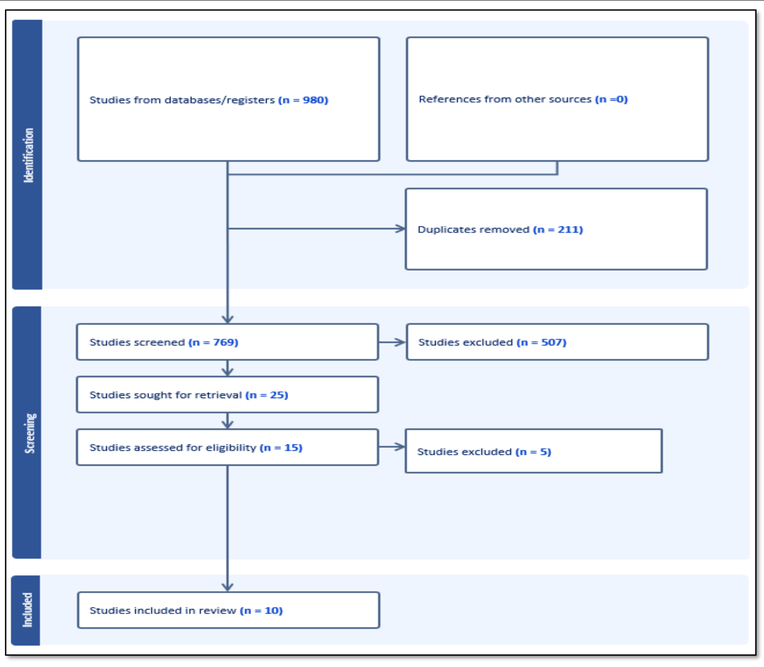

Figure 1. PRISMA flowchart.

Author	Population	Age (mean ± SD) (years)	Patients diagnosed with *Schistosoma haematobium* (%)	Patients with Bladder Abnormalities (%) and Type
Deniaud et al. (2020)	Patients who had traveled to Europe from sub-Saharan Africa. **N= 86**	24.7 ± 7.4	100	34.9 masses, bladder wall irregularities, thickening.
Bocanegra García et al. (2018)	School children previously diagnosed with urinary schistosomiasis in Angola. **N = 157**	8.7 ± 3.2	100	84.7 distorted shape, irregular bladder walls, wall thickening, mass (≥1), pseudopolyps (≥1).
Barda et al. (2017)	Preschool and school children infected with *S. haematobium* in Ivory Coast. **N= 303**	Preschool children 3.8 ± 0.1 School children 8.9 ± 0.2	100	Preschool children: 40; focal wall thickening, bladder heterogeneously echoic, polyps, or masses on wall. School aged children: 47; heterogeneous wall or focal thickening of the bladder, polyps, or masses on the wall.
Onile et al. (2016)	Adults living in Nigeria. **N= 257**	48 ± 12.2	25.7	33.9; wall thickness, abnormal shape, wall irregularities, masses, calcification.
Elmadani et al. (2013)	School children living in Sudan. **N= 103**	11.3 ± 2.9	71	90.4; wall thickening, 43.3; 1 polyp; 40.9; (≥ 1), 7.6; calcification.
Ekwunife et al. (2009)	School children who live in Southeast Nigeria. **N = 60**	> 5	100	38.3; wall irregularity wall thickening, wall masses.
Kéita et al. (2005)	School children in Mali. **N= 346**	Range 7-10	72	3.5; Irregular bladder wall. 2.3; wall thickening. 2.3; masses. 0.9; pseudopolyps.
Brouwer et al. (2003)	School children in Zimbabwe. **N (total)= 551** **N (students who received US) = 222**	Range 9-16	59.7	27; major thickenings of or masses or polyps on the walls.
Salah et al. (1999)	Patients with active *S. haematobium* infection in Yemen. **N= 158**	17	100	82; thickness, hyper echogenicity, and polypoid lesions.
Serieye et al. (1996)	Individuals who live in Madagascar. **N= 574**	>5	75.9	47

Table 1. Preliminary Characteristics of Included Studies**.**

Discussion

- Ultrasound was able to diagnose and provide key information about disease state, progression, and management.
- Imaging was able to show bladder masses, hyperechogenicities, general lesions along with calcifications caused by *S. haematobium* infection.
- Therefore, imaging is an important tool for risk stratification caused by schistosomiasis.
- Synthesizing the current literature on imaging for evaluating genitourinary schistosomiasis will strengthen the current body of knowledge as well as translate into clinical recommendations that may improve risk stratification techniques in clinical practice.

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