Abstract # 1194,
#591, Poster Session A

An Update on the Role of Imaging in the Care of Patients with Schistosomiasis

Celine Lecce[1], Leila Makhani[1,2], Shveta Bhasker[1], Christian Lecce[1], Jason Kwan[1], Michael Klowak[1], Priyanka Challa[1], Anjola Ogunsina[1], Osaru Omoruna[1], Kimberley Marks-Beaubrun[1], Zachary Corso[1], Rachel Lau[2], Andrea Boggild[1, 3, 4]

[1]Tropical Disease Unit, Division of Infectious Diseases, University Health Network-Toronto General Hospital, [2]Department of Family and Community Medicine, University of Toronto, Ontario, Canada [3]Public Health Ontario Laboratories, Public Health Ontario, Toronto, Canada, [4]Department of Medicine, University of Toronto, Toronto, Canada

Background:

- Schistosomiasis leads to significant morbidity and mortality worldwide and infection with *Schistosoma mansoni* and *S. japonicum* can lead to severe hepatic disease including periportal liver fibrosis, portal hypertension and esophageal varices[1]
- World Health Organization (WHO) guidelines recommend the use of abdominal imaging to detect early hepatic changes in order to improve disease outcome[2] but there are limited up-to-date authoritative resources to guide the utilization of imaging in the initial management of those with schistosomiasis
- **We mapped available literature regarding the role of imaging in the evaluation of patients with schistosomiasis to inform clinical recommendations for risk stratification of disease**

Methods:

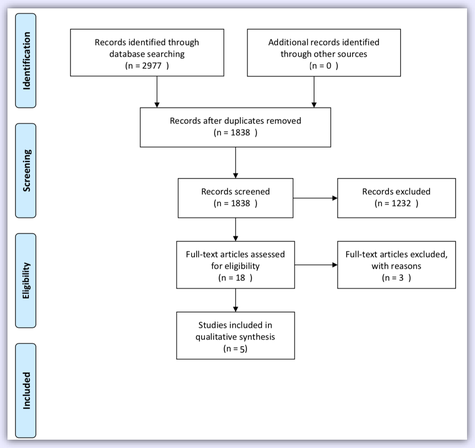
- Eight electronic databases were searched: Ovid Medline, EMBASE, Cochrane Library of Systematic Reviews, Epistemonikos, Global Health, NICE, TRIP and LILACS from database inception to February 28, 2019 with the following search terms:

Schistosomiasis		Medical Imaging		Liver
Schistosomiasis		CT		Liver
Schistosoma mansoni		Computed tomography		Periportal fibrosis
Schistosoma japonicum		Ultrasound		Hepatic
		Ultrasonography		Echogenic*
		MRI		Hepatosplenic
	AND	Magnetic resonance imaging	AND	
		Echo imaging		
		Sonography		
		Sonogram		
Schistosomiasis OR Schisto* AND (mansoni OR japonicum)		CT OR (computed AND tomography) OR Ultraso* OR Sonogr* OR MRI OR (Magnetic AND resonance AND Imaging) OR Echo OR Imaging		Liver OR periportal OR peri-portal OR fibrosis OR hepat* OR echogenic*

- Titles, abstracts and full-text articles were systematically screened by two reviewers with a tertiary arbitrator
- Data extraction was performed by two reviewers and the quality of the articles will be critically evaluated using the Grading of Recommendations Assessment, Development, and Evaluation (GRADE) approach. Meta-analysis was performed in comprehensive meta-analysis software using random effects model

Results: *collated from analysis of 5 articles selected for full text review by Oct 31/19*

Figure 1: PRIMSA Flow Diagram



Contact:
Dr. Andrea K. Boggild
E-mail: andrea.boggild@utoronto.ca
@BoggildLab
Website: www.boggildlab.ca

Based on the data analyzed for this **systematic review** to date:

The pooled **prevalence** for **liver fibrosis** detected by **ultrasound was 60%** in patients with schistosomiasis in Brazil

Abdominal **ultrasound** can detect liver fibrosis **in the absence of clinical disease**

Abdominal ultrasound is an important diagnostic tool in the diagnosis of schistosomiasis-related liver disease

Results Cont'd:

Table 1: Summary of Data Captured

Study	Author (Year)	Study Setting	Baseline Characteristics	Patients with Diagnosis of *Schistosomiasis mansoni*	Patients with Liver Abnormalities (all degrees) Detected by Ultrasound	Percentage of Patients with Fibrosis Detected by Ultrasound
1	Lucia (1993)	Brazil	Patients with schistosomiasis attending University Hospital in Recife	176	121	68.8
2	Barata (1999)	Brazil	Patients aged 5-45 with acute schistosomiasis (n=26 acute schistosomiasis, n=26 controls)	26	5	19.2
3	De Jesus (2000)	Brazil	Patients aged 7-38 with schistosomiasis diagnosed x 2 tests x 2 separate days	164	156	95
4	Koukounari (2006)	Mali	Children from 29 schools with schistosomiasis	2820	1156	40.1
5	Prata (2010)	Brazil	Group 1: (n=41) clinical evidence of liver disease Group 2: (n=102) clinical evidence of liver disease in the past Group 3: (n=268) no clinical evidence of liver disease N=411 with schistosomiasis	411	128	31.1

Figure 2:

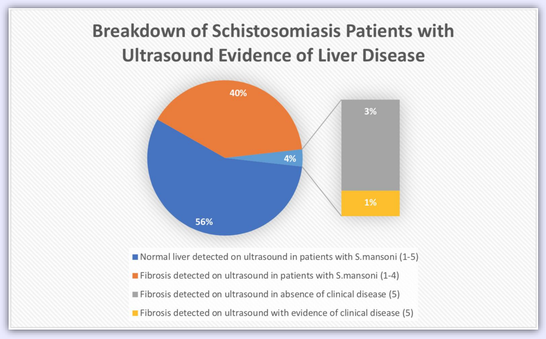
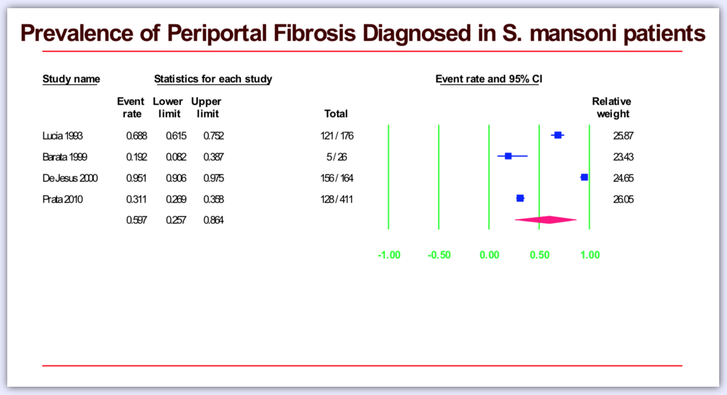


Table 3:



- The pooled prevalence of periportal fibrosis was 60% across the 4 studies evaluating 777 patients with schistosomiasis in Brazil
- The most well represented imaging modality was ultrasound scanning, which documented liver status in 100% of patients
- No included studies reported on use of CT or MRI for liver evaluation

Discussion:

- Abdominal ultrasound is an important diagnostic tool in the detection of schistosomiasis related liver disease
- WHO guidelines support that abdominal imaging can detect early hepatic changes that could indicate downstream periportal fibrosis[2], thereby improving outcomes
- Synthesizing the current literature on abdominal imaging in the evaluation of schistosomiasis can translate into clinical recommendations for improved risk stratification and management of schistosomiasis, and thereby overall improvement of disease outcomes

References:

1. Allen Ross, A. G. et al. Schistosomiasis. N Engl J Med 346, (2002).
2. 2. World Health Organization (WHO). (1996). *Ultrasound in Schistosomiasis. A Practical Guide to the Standardized Use of Ultrasonography for the Assessment of Schistosomiasis-related Morbidity.* Second International Workshop, UNDP/World Bank/WHO/TDR.
3. CH Barata et al, *Abdominal ultrasound in acute schistosomiasis.* British Journal of Radiology, 72 (1999).
4. A Lucia C et. al, *An ultrasonographic study of liver fibrosis in patients infected with Schistosoma mansoni in north-east Brazil.* Transactions of the Royal Society of Tropical Medicine and Hygiene, 87 (555-558) (1993).
5. A. Koukounari et al, *Assessment of ultrasound morbidity indicators of schistosomiasis in the context of large-scale programs illustrated with experiences from Malian children.* Am J Trop. Med. Hyg. 75 (6), 2006, pp 1042-1052
6. A. Prata et al, *Comparison between clinical and ultrasonographic findings in cases of periportal fibrosis in an endemic area for schistosomiasis mansoni in Brazil.* Revista da Sociedade Brasileria de Medicina Tropical, 43(2): 129-134, 2010
7. A R De Jesus et al. *Morbidity associated with schistosoma mansoni infection determined by ultrasound in an endemic area of Brazil, Caatinga do Moura.* Am. J. Trop. Med. Hyg. 63 (1, 2), 2000, pp 1-4.

#betterposter