

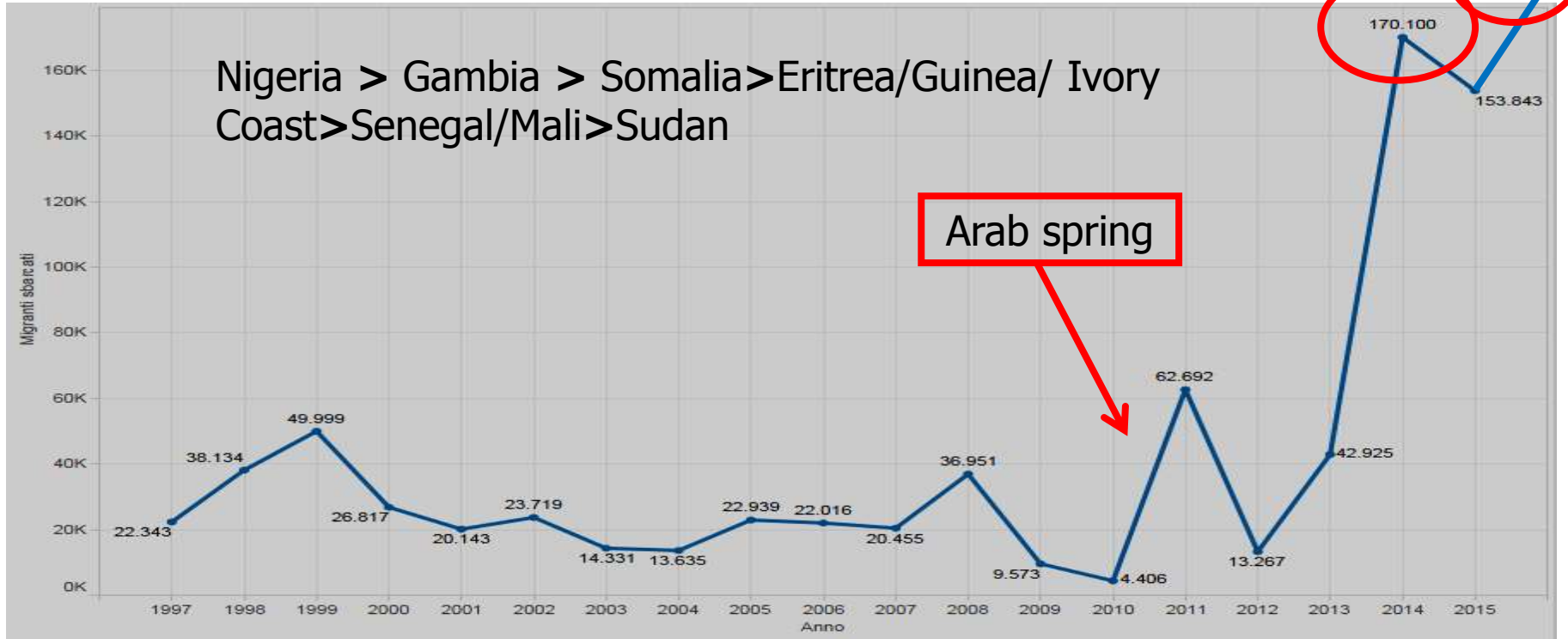
Urological findings and praziquantel efficacy in immigrants from Sub Saharan Africa to Europe with genito-urinary schistosomiasis

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Agostino Tuccio, Andrea Minervini, Simone Agostini, Alessandro Bartoloni



Map 3-12. Geographic distribution of schistosomiasis

Number of incoming immigrants/year



Retrospective observational study

January 2011- October 2016

Outpatients seen at **Tuscany Reference Centre for Tropical Diseases** (TRCTD) , Florence, Italy

Centro di Riferimento
Regione Toscana per le



malattie
tropicali

OBJECTIVES

- Describe the burden of Genito-Urinary Schistosomiasis (GUS)
- Investigate the correlation between presence of symptoms, laboratory and ultrasound findings
- Study the efficacy of Praziquantel in reversing organ morphological alterations

UROLOGICAL FINDINGS AND PRAZIQUANTEL EFFICACY IN IMMIGRANTS FROM SUBSAHARAN AFRICA TO EUROPE WITH SCHISTOSOMA HAEMATOBIIUM INFECTION

Project coordinator: Dr. Lorenzo Zammarchi – lorenzo.zammarchi@unifi.it

*Required



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CASE REPORTING FORM (CRF)

FIRST VIST

1. Patient code *

First letter of Name + First letter of surname +
date of diagnosis (example: GG210615)

2. Clinic or Center Name *

3. Country of the clinic *

Basic Patient Data

to filled for each patient with Schistosoma spp diagnosis fulfilling both the 2 inclusion criteria:

1) Sub-Saharan African immigrants arrived in Europe

AND

2) Diagnosis of schistosoma infection based on one of the following:

• Schistosoma serology positive

AND/OR

• patients with schistosoma ova in urine or stool

53. Date of baseline US

Example: 15 December 2012

Please answer to the following questions according to the WHO classification as showed in the image



54. Urinary bladder shape

Please choose one of the following, in order to give scores according to the WHO classification
Mark only one oval.

- Normal (rectangular)
 Round (distorted)

55. Bladder wall: please record each of the lesion observed in only one of the following categories

please do not record mass and pseudopolyp/wall irregularity/thickening at the same time (see WHO Niamey classification)

Mark only one oval per row.

	No	Focal or single lesion	Multifocal/diffuse
Wall irregularity (inner surface, thickening < or = 5 mm)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wall thickening (>5- < or =10 mm)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mass (>10 mm)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pseudopolyp	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

56. In case of mass or pseudopolyp, please specify their number

57. Ureters

Mark only one oval per row.

	not visualized	dilated, visualized at proximal and/or distal third	grossly dilated and/or entirely visualized
Right ureter	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Left ureter	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

CASE REPORT FORM: eCRF

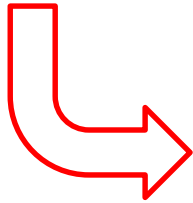
Google Moduli

Inclusion criteria

- Immigrant subject from Sub Saharan Africa (SAA)

AND

- Schistosomiasis diagnosis



Positive serology AND/OR
Positive ova in urine/stool AND/OR
Suggestive histological exam

Genito-urinary schistosomiasis

One criteria among:

- Macroscopic haematuria
- Microscopic haematuria
- Positive ova in urine test
- Genito-urinary ultrasound (US) findings







Basic investigations performed in TRCTD

Abdominal
ultrasound

+

- schistosoma WB serology
- urine for ova (3 samples collected after exercise between 10-14h)
- urine analysis (chemical and microscopic)
- parasitological examination of stool
- full blood count
- sGPT
- creatinine
- glucose
- tot IgE
- HBsAg, HCV Ab, HIV 1-2 Ab/Ag

Recueillir les urines pour l'examen standard	
<p>COMMENT RECUEILLIR LES URINES: Recueillir les trois premières urines du matin du jour de la visite. Pour les femmes, évitez le recueil des urines pendant la période menstruelle.</p> <ol style="list-style-type: none">1. Avant de recueillir les urines, lavez-vous les mains et les parties génitales avec du savon et de l'eau.2. Éliminez le premier jet d'urine dans les toilettes, puis recueillez les urines intermédiaires (au milieu de jet) dans le flacon avec le BOUCHON BLANC.3. Quand vous avez rempli à moitié le flacon, fermez-le et retirez l'étiquette.4. Insérez l'éprouvette dans l'orifice du bouchon et attendez qu'elle soit remplie. Ne retournez pas le flacon: l'éprouvette va se remplir automatiquement.5. Apportez seulement l'éprouvette qui contient les urines (le flacon plus grand n'est pas nécessaire).	
Recueillir les urines pour l'examen cytbactériologique	
<p>COMMENT RECUEILLIR LES URINES: Recueillir les trois premières urines du matin du jour de la visite.</p> <ol style="list-style-type: none">1. Avant de recueillir les urines, lavez-vous les mains et les parties génitales avec du savon et de l'eau. Ne touchez pas la partie interne du flacon, ni du bouchon.2. Éliminez le premier jet d'urine dans les toilettes, puis recueillez les urines intermédiaires (au milieu de jet) dans le flacon avec le BOUCHON JAUNE.3. Quand vous avez rempli à moitié le flacon, fermez-le.4. Soulevez l'étiquette qui se trouve sur le bouchon et insérez l'éprouvette dans l'orifice. Attendez que l'éprouvette soit remplie. Ne retournez pas le flacon: l'éprouvette va se remplir automatiquement.5. Apportez seulement l'éprouvette qui contient les urines (le flacon plus grand n'est pas nécessaire).	
Recueillir les urines pour la recherche des œufs du Schistosoma haematobium	
<p>COMMENT RECUEILLIR LES URINES: Prelevez trois échantillons d'urine en trois jours différents. Prelevez les deux premiers échantillons en deux jours différents, entre 10h00 et 14h00. Prelevez le troisième échantillon le jour où vous apportez les échantillons d'urine. Pour chaque échantillon, suivez ces règles:</p> <ol style="list-style-type: none">1. Avant de recueillir les urines, lavez-vous les mains et les parties génitales avec du savon et de l'eau.2. Avant de recueillir les urines, faites 20-30 sauts.  <ol style="list-style-type: none">3. Urinez normalement dans les toilettes, puis recueillez la dernière partie du flux d'urine dans le flacon avec le BOUCHON ROUGE. Le flacon doit être rempli à moitié.4. Il est important que vous recueilliez la dernière partie du flux d'urine. Quand vous avez rempli le flacon, fermez-le.5. Conservez les échantillons à une température d'environ 4°C.	

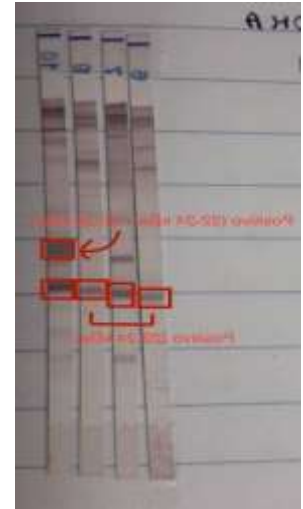
Materials

Serology: WB Schisto II (LDBIO Diagnostic)

Ultrasound:
WHO Niamey
Classification

Niamey Score:
pathological if ≥ 1

Record sheet for <i>S. haematobium</i> associated ultrasound findings		page 1
Name, other names		
Patient number		
Date of examination (day/month/year)		
Age / Year of birth		
Sex: (If female: is she pregnant? yes: / no: consider separately / not pregnant)		Female / Male
Ultrasound transducer used: convex / sector / linear		Height cm
MODULE 1 - STANDARD EXAMINATION		
Urinary bladder		Score
Shape normal (rectangular) = 0 round (distorted) = 1		
Bladder wall: record each lesion observed in <u>one</u> of the following categories		
Wall irregularity (inner surface, thickening ≤ 5 mm) No = 0 focal = 1 multifocal / diffuse = 2		
Wall thickening (≥ 5 mm, < 10 mm) No (≤ 5 mm) = 0 focal = 1 multifocal / diffuse = 2		
Mass (≥ 10 mm) (do not record as wall irregularity or focal thickening at the same time) no = 0 single = 2 multiple, number of masses (max) = 2		
Pseudopolyp (do not record as wall irregularity, thickening or mass at the same time) no = 0 single = 2 multiple, number of pseudopolyps (max) = 2		
Ureters		
Right ureter not visualised = 0; dilated, visualised at proximal end / or distal third = 2; grossly dilated and/or entirely visualised = 4		
Left ureter not visualised = 0; dilated, visualised at proximal end / or distal third = 2; grossly dilated and/or entirely visualised = 4		
Renal pelvis (if dilated, record only after scoring)		
Right pelvis not dilated, fissure < 1 cm = 0; moderately dilated, parenchyma thickness (1-sided) ≥ 1 cm = 1; marked hydronephrotic, parenchyma compressed; thickness < 1 cm = 2		
Left pelvis not dilated, fissure < 1 cm = 0; moderately dilated, parenchyma thickness (1-sided) ≥ 1 cm = 1; marked hydronephrotic, parenchyma compressed; thickness < 1 cm = 2		
Urinary bladder intermediate score		
Upper urinary tract intermediate score		
Final <i>S. haematobium</i> score		

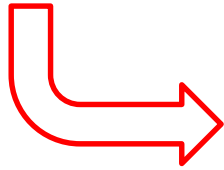


Urinary bladder
intermediate score

Upper urinary tract
intermediate score

Management

FOLLOW-UP: repeat only altered exams at baseline



- 1-2 months
- 6 months

TREATMENT: PZQ 40 mg/Kg/day in two doses for 3 consecutive days, informed consent needed (foreign drug)



Results

42 pts: Schistosomiasis diagnosis



6 pts: no data → excluded

36pts: study population



2 pts: Hepato-intestinal
schistosomiasis (?)

28 pts: GUS

6 pts: only positive
serology

Daemographic data

36 male patients, mean age: 22 y.o.

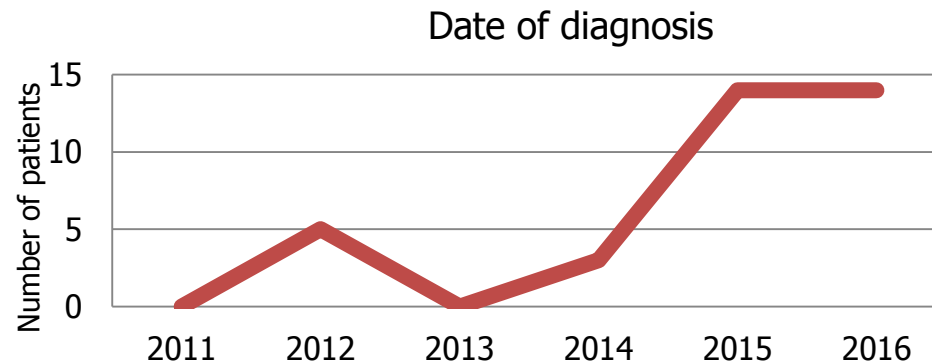
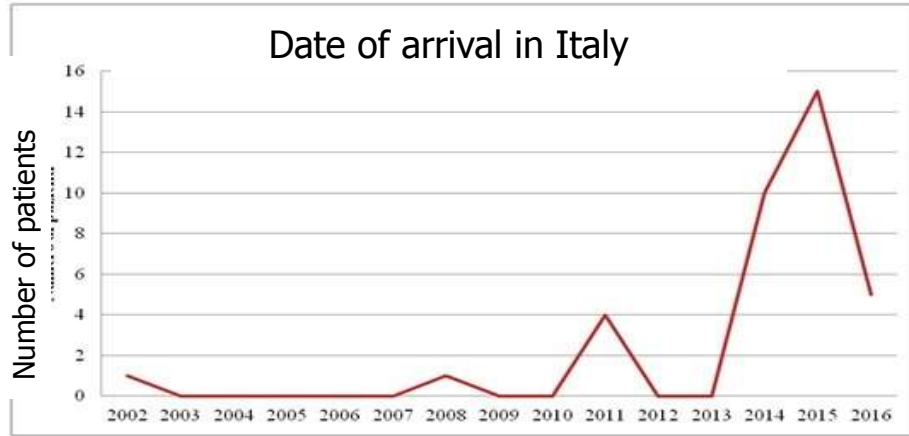
Origin: 58% from Mali



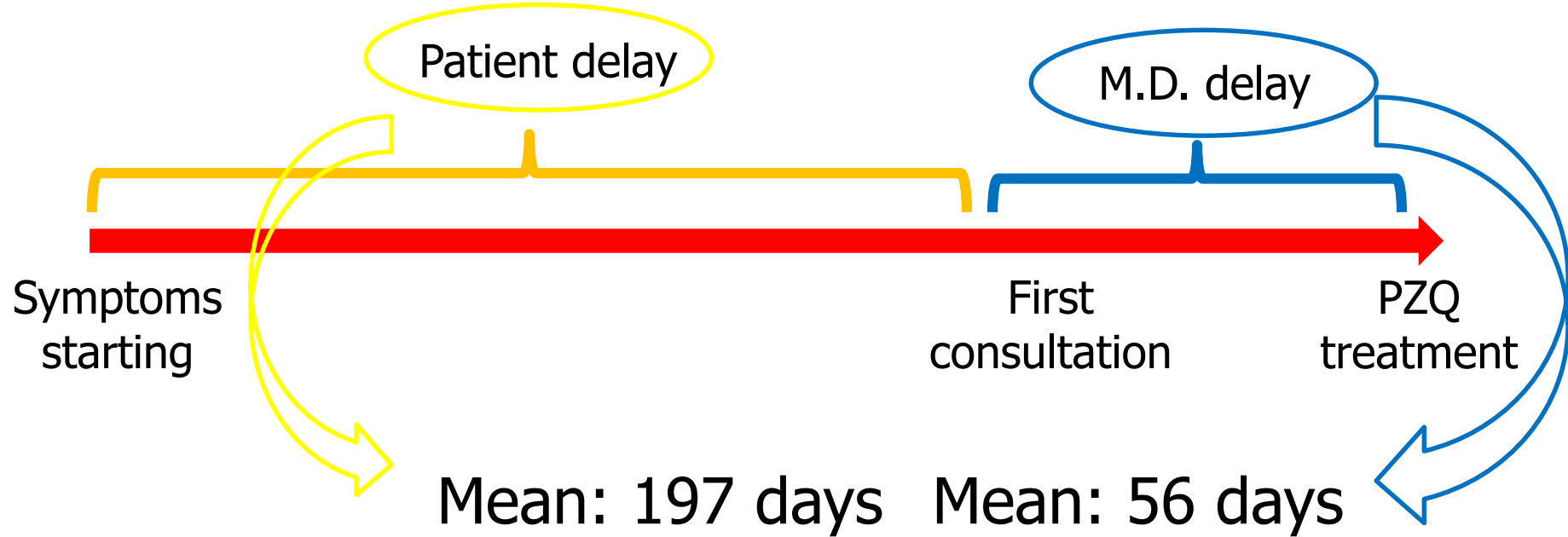
Kayes Region



Increase of cases in 2014-2016



Diagnostic delay



Mean global delay: 253 days

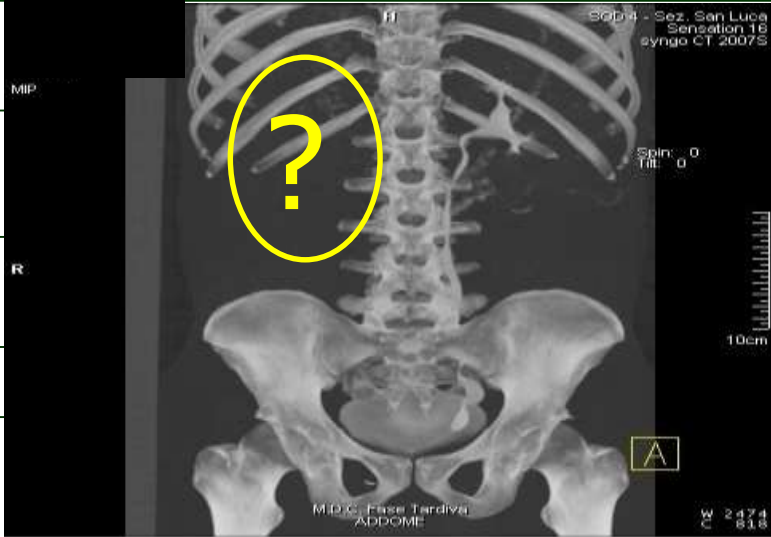
Signs, symptoms and laboratory

Clinical data	% of pts
Macroscopic haematuria	69,5% (25/36)
Dysuria	25% (9/36)
Abdominal pain	22% (8/36)
Eosinophilia	31% (11/35)
Microscopic haematuria	58% (21/36)
Proteinuria	31% (11/36)
Leucocituria	53% (19/36)

Uroparasitological
test: 34/36 pts: →
positive in 11/34

Serology: 34/36 pts
→ positive in 32/34

Ultrasound findings



36



2 pts: US not performed/not classified by Niamey → excluded

34



LESIONS



4pts: upper
urinary tract

13pts: lower
urinary tract

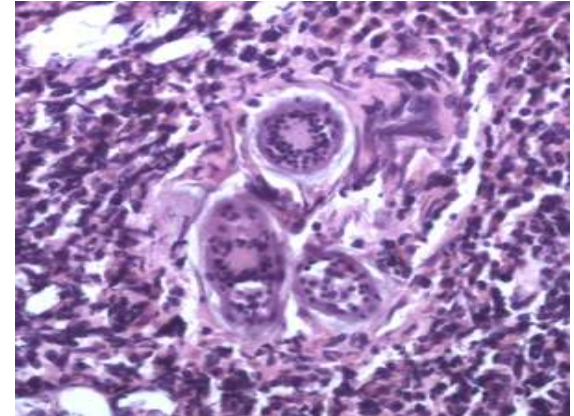
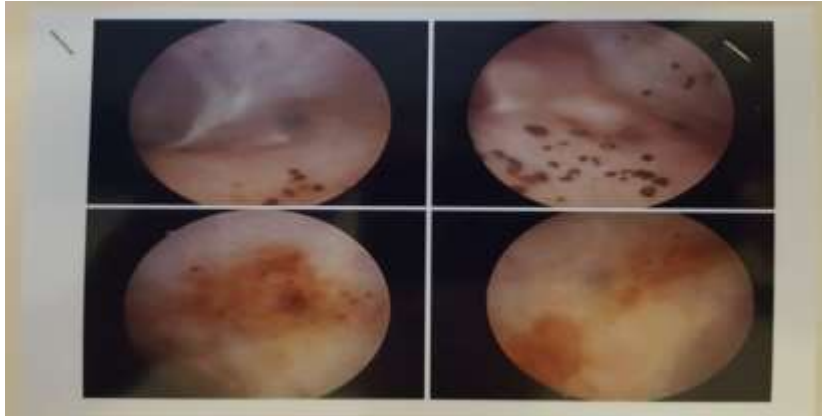
Urology and surgery



All cases: histologic confirmation!

2 pts: diagnosis and then TURB

3 pts: 2 TURB and 1 nefrectomy
and then diagnosis

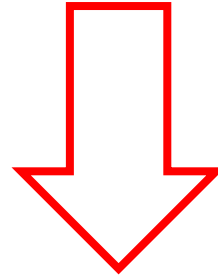


Investigate the correlation between presence of symptoms, laboratory and ultrasound findings

8/13: ova in urine

13/13: macroscopic haematuria

11/12*: microscopic haematuria



Fisher Test:

-p 0.0464 microscopic haematuria + US lesions

-p 0.026 macroscopic haematuria + US lesions

-P < 0.0078 ova in urine + US lesions

*(1 pt. without exams)

Efficacy of Praziquantel 1-2 months

Symptoms relief	Yes	No
	82% (23/28)	18% (5/28)

Data available for all 28 patients with symptoms at baseline

Uroparasitological exam	Positive	Negative
	0% (0/11)	100% (11/11)

Data available for all 11 patients without positive uroparasitological exam at baseline

Niamey Score	Improved	Stable	Worsened
Upper tract score	17% (2/12)	83% (10/12)	0% (0/12)
Lower tract score	33% (4/12)	58,5% (7/12)	8,5% (1/12)
Global score	50% (6/12)	41,5% (5/12)	8,5% (1/12)

*Data available for 12 on 17 patients (70,5%) with US lesions at baseline;
rate of lost to f-up: 29.5%*

Efficacy of Praziquantel 6 months

Symptoms relief	Yes	No
	96% (24/25)	4% (1/25)

*Data available for 25 of 28 patients (89%) with symptoms at baseline;
rate of lost to f-up: 11%*

Uroparasitological exam	Positive	Negative
	17% (1/6)	83% (5/6)

*Data available for 6 of 11 patients (55%) with positive uroparasitological exam at baseline;
rate of lost to f-up: 45%*

Niamey Score	Improved	Stable	Worsened
Upper tract score	0% (0/8)	100% (8/8)	0% (0/8)
Lower tract score	62,5% (5/8)	25% (2/8)	12,5% (1/8)
Global score	62,5% (5/8)	25% (2/8)	12,5% (1/8)

*Data available for 8 of 17 patients (47%) with US lesions at baseline;
rate of lost to f-up: 53%*

Literature- US findings

- Salas-Coronas et al.: 41%(non endemic area)

Enferm Infecc Microbiol Clin. 2013 Apr;31(4):205-9. doi: 10.1016/j.eimc.2012.04.003. Epub 2012 Jun 9.

[Radiological findings in patients with imported schistosomiasis].

[Article in Spanish]

Salas-Coronas J¹, Vázquez-Villegas J, Villarejo-Ordóñez A, Sánchez-Sánchez JC, Espada-Chavarría J, Soriano-Pérez MJ, Cabeza-Barrera MI, Cabezas-Fernández MT.

- Magak et al.: 10% (endemic area)

Am J Trop Med Hyg. 2015 Aug;93(2):371-6. doi: 10.4269/ajtmh.15-0153. Epub 2015 May 26.

Case-Control Study of Posttreatment Regression of Urinary Tract Morbidity Among Adults in Schistosoma haematobium-Endemic Communities in Kwale County, Kenya.

Magak P¹, Chang-Cojulun A¹, Kadzo H¹, Ileri E¹, Muchiri E¹, Kitron U¹, King CH².

- Elmadani et al.: 89,5% (endemic area, children)

Saudi J Kidney Dis Transpl. 2013 Jan;24(1):162-7.

Ultrasound findings in urinary schistosomiasis infection in school children in the Gezira State Central Sudan.

Elmadani AE¹, Hamdoun AO, Monis A, Karamino NE, Gasmelseed N.

Efficacy of PZQ

- Zwang and Olliaro: CR 77,1%
- Zwang and Olliaro: ERR 94,1%

[PLoS Negl Trop Dis](#). 2014 Nov 20;8(11):e3286. doi: 10.1371/journal.pntd.0003286. eCollection 2014.

Clinical efficacy and tolerability of praziquantel for intestinal and urinary schistosomiasis-a meta-analysis of comparative and non-comparative clinical trials.

[Zwang J](#)¹, [Olliaro PL](#)².

- Resistance in endemic areas?

[Parasitol Res](#). 2012 Nov;111(5):1871-7. doi: 10.1007/s00436-012-3151-z. Epub 2012 Oct 7.

Susceptibility or resistance of praziquantel in human schistosomiasis: a review.

[Wang W](#)¹, [Wang L](#), [Liang YS](#).

Take home message/ limits of the study

“Three day course of praziquantel reduced symptoms, ova in urine and the number of lesions detected by ultrasound in adult immigrants from SSA”

BUT

Small number of the study population

Monocentric study

High number of lost to follow-up

Retrospective study

Collaborations

Our study was proposed to the TropNet Network



Other participants
are welcome!



Acknowledgments

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Marta Tilli

Antonia Mantella

Alessandro Bartoloni

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and Clinical Medicine;
Infectious and Tropical
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Department of Urology

Simone Agostini

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Thank you
for the attention!

