Urinary schistososmiasis

Presented by

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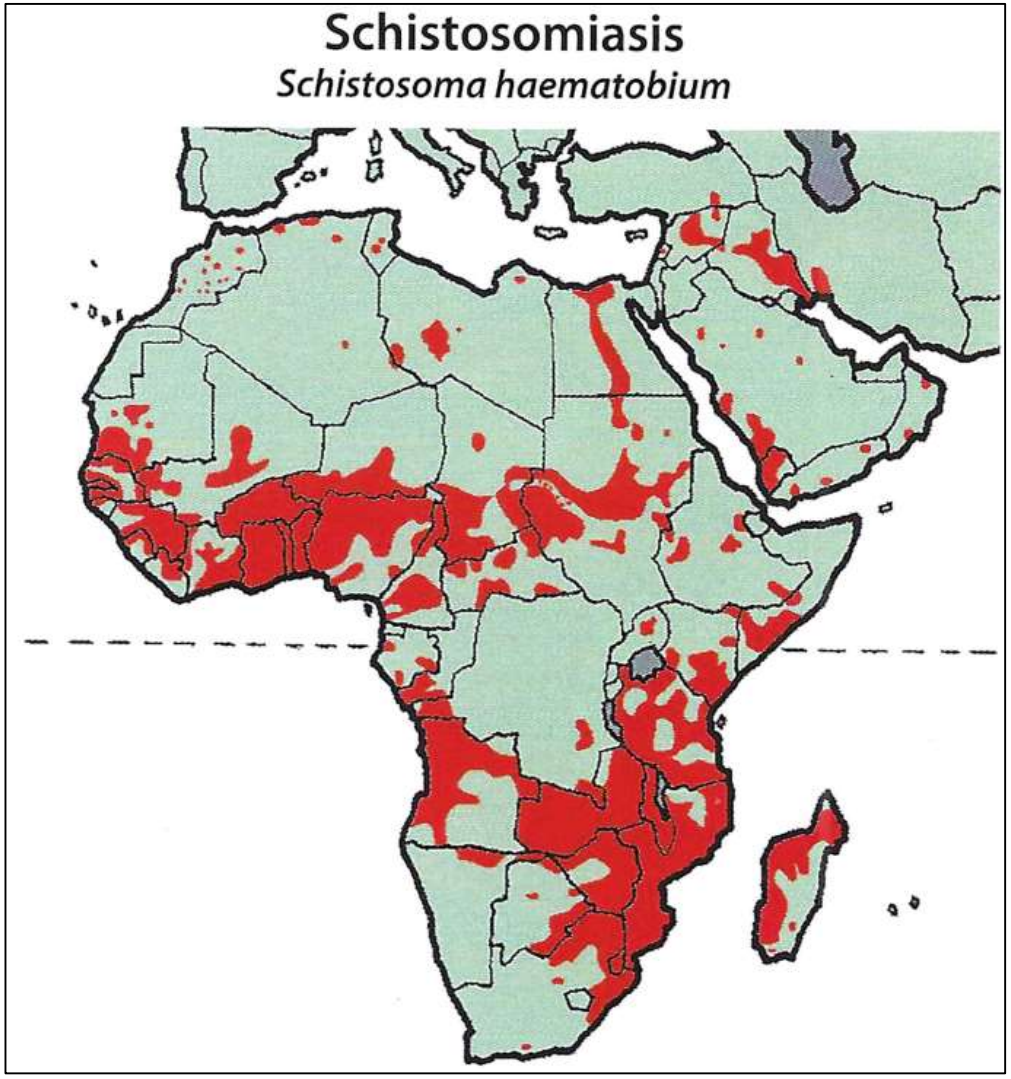
Classification of *Schistosoma species*

Phylum	• Platyhelminths
Class	• Trematoda
Order	• Digenea
Genus	• *Schistosoma*
Species	• *haematobium*

Geographical distribution and habitat

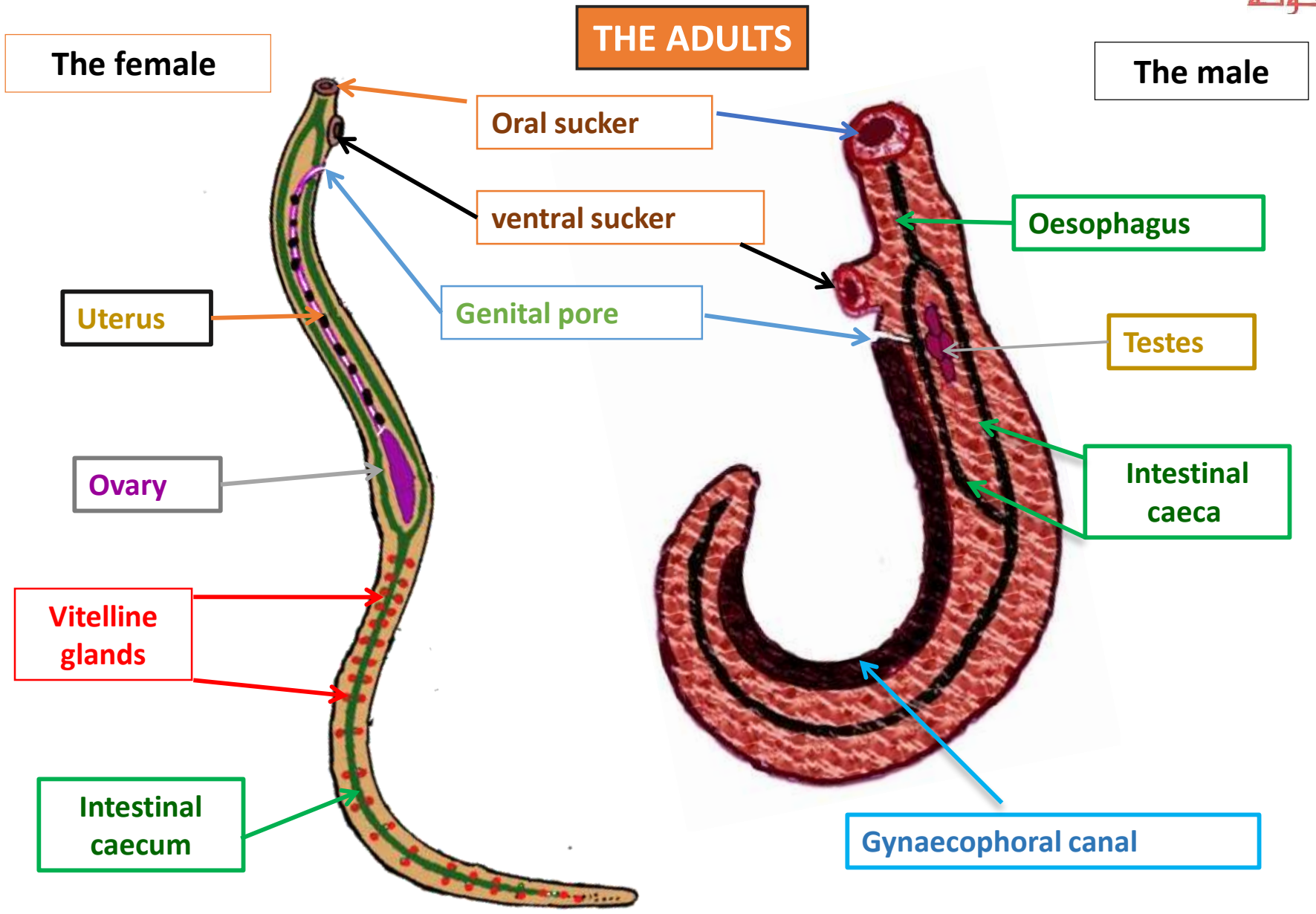


Nile Valley, Africa, and Asia

Vesical and pelvic venous plexus

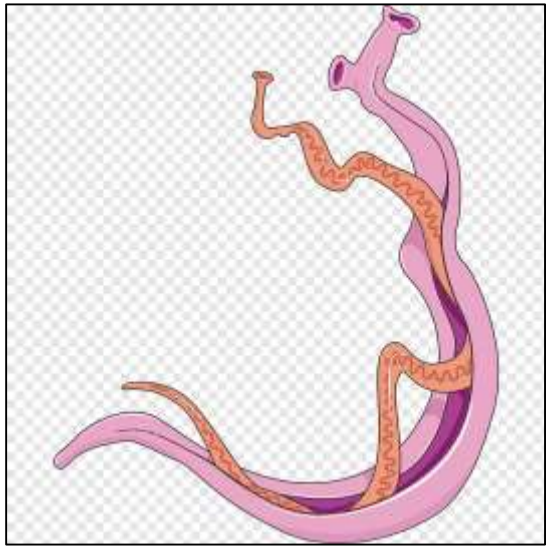
Why does Jordan lack a high number of cases of schistosomiasis ???????

General characters of schistosomes



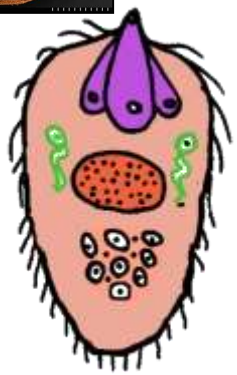
Schistosoma haematobium

Intestinal caeca reunite at the posterior 1/3 of the body



Male and female in copula

- **Size:** 140x60 µ
- **Shape:** Oval with terminal spine
- **Color:** Translucent
- **Content:** Mature miracidium



Miracidium

Mother sporocyst

Daughter sporocyst

Furcocercus cercaria

Miracidium, Sporocyst, Daughter sporocyst, Cercaria

Larval stages

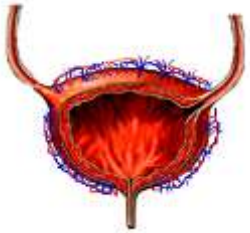
S. haematobium LIFE CYCLE

systemic circulation

lungs

venous circulation

Maturation in the liver then migrates to its habitat

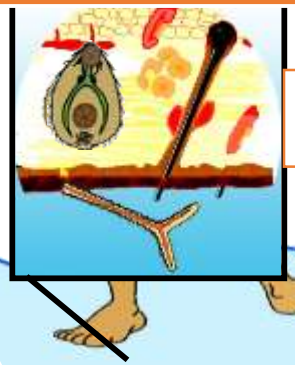


Adults inhabit Vesicular veins of the urinary bladder

Female lay eggs in vesicular venules

Eggs pass with urine

SCHISTOSOMULUM

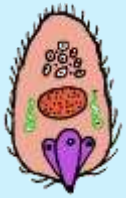


Cercariae penetrate human skin

D. H.

Fresh water

Miracidium hatchs



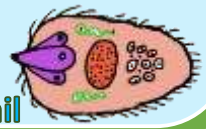
Daughter sporocyst

Mother sporocyst

CERCARIA

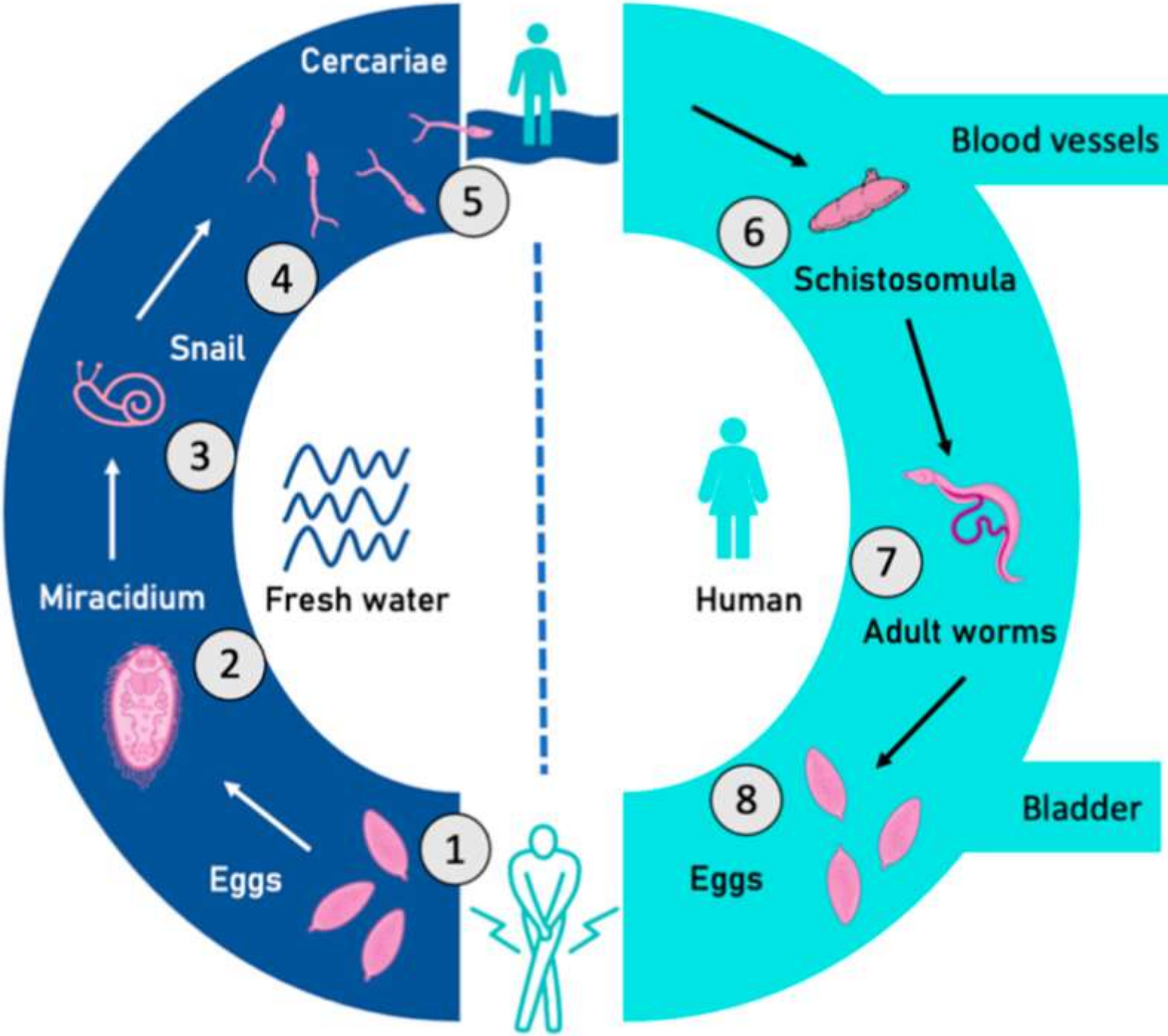
Cercariae attach to human skin

Cercariae emerge from the snail host



Miracidium penetrates snail

I. H.


Cercariae
5
4
Snail
3
Miracidium
2
Eggs
1
Fresh water
Human
Blood vessels
6
Schistosomula
7
Adult worms
8
Eggs
Bladder

Habitat: vesical and pelvic veins

Host

- **Definitive host: Man**
- **Intermediate host: *Bulinus trancatus* snail**
- **Reservoir host: No reservoir host**

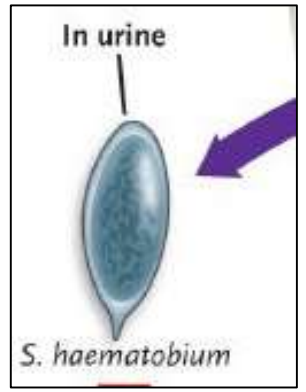
Diagnostic stage: Egg

Infective stage: Furcocercus cercaria

Mode of infection: Swimming or drinking infected water

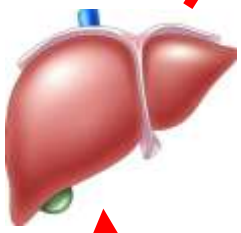
Urinary schistosomiasis

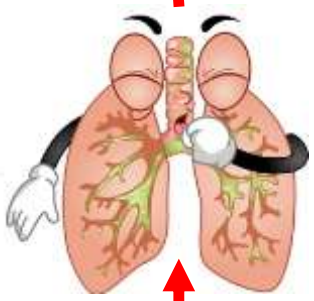
Stages of disease



3- Stage of egg deposition and tissue reaction

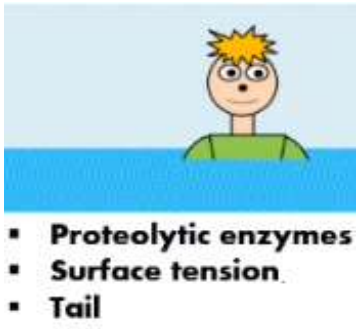
2- Stage of migration





Blood

1- Stage of invasion



***Bulinus trancatus* snail**

Urinary Schistosomiasis (Bilharziasis)

Stages of disease

1- Stage of invasion

Manifestations

- **Skin lesion due to cercarial penetration.**
- **Local dermatitis, irritation, itching and papular rash.**

Urinary Schistosomiasis (Bilharziasis)

Stages of disease

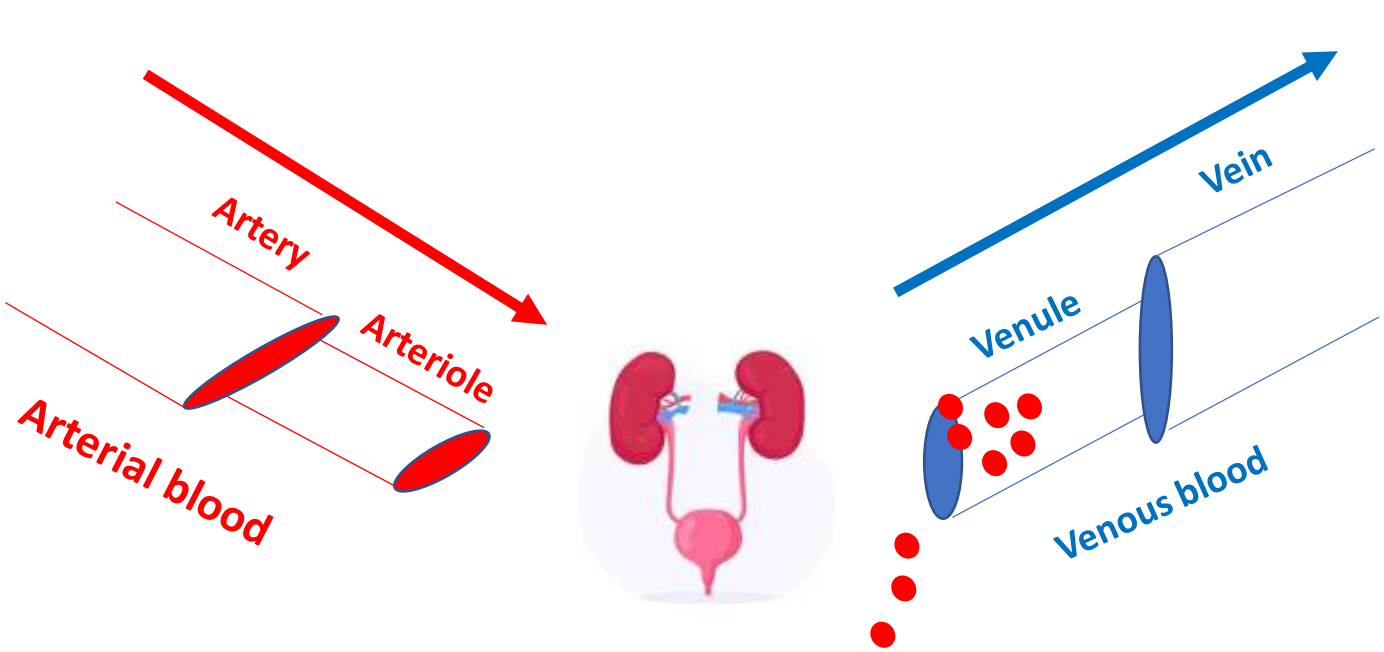
2- Stage of migration

❖**Lung :** Irritation due to passage of schistosomulum causing minute haemorrhage, cough, sputum, dyspnea and eosinophilia, and pneumonitis.

❖**Liver :** Enlarged tender liver and spleen.

❖**Toxic symptoms:** Due to metabolic products of maturing parasites causing fever, anorexia, headache, malaise and muscle pain.

3- Stage of egg deposition and tissue reaction



Eggs can reach the bladder wall by:

1- Egg spine.
2- Proteolytic enzymes.
3-Elastic recoil of blood vessels.

The eggs have three destinations:

1- Pass through the wall to the lumen, or
2- Trapped in the wall which leads to granuloma, fibrosis, and strictures, or
3- Eggs moved with the venous circulation forming embolism. (Liver, lung, CNS, skin, ….)

3- Stage of egg deposition (A)

❖**Active escape of eggs in urine produce tissue damage and manifested by :-**

- **Frequency of micturation.**
- **Burning sensation during micturation.**
- **Terminal haematuria➲ iron deficiency anaemia.**
- **Dull pain in the loin and supra pelvic region (urinary bladder).**

Why terminal haematuria ????????

3- Stage of egg deposition (B)

❖Trapped eggs in the bladder wall➲ hyperemia, popular formation and ulcers.

❖Later on, granuloma formation with the bladder wall becomes fibrosed and thickened➲ loss of its elasticity.

❖Granuloma formation around egg is the main pathogenic lesion ➲ fibrosis ➲ bilharzial nodules, papillomata, sandy patches and reduced egg output.

Bladder

Fibrosis, 2ry bacterial infection, stones, sandy patches ➲ malignancy.

Ureter

Stenosis, hydroureter, hydronephrosis ➲ 2ry bacterial infection ➲ renal failure.

Urethra

Stenosis

Genital organs

Affection of prostate and testes and spermatic cord in male and vagina and vulva in female.

3- Stage of egg deposition (C)

Embolic lesions

Some eggs are swept back into the blood stream to different organs

Liver

Periportal fibrosis ➲portal hypertension➲ hepatosplenomegaly ,ascitis.

Lung

Biharzial corpulmonal

↓

Pulmonary hypertension & Rt. side heart failure

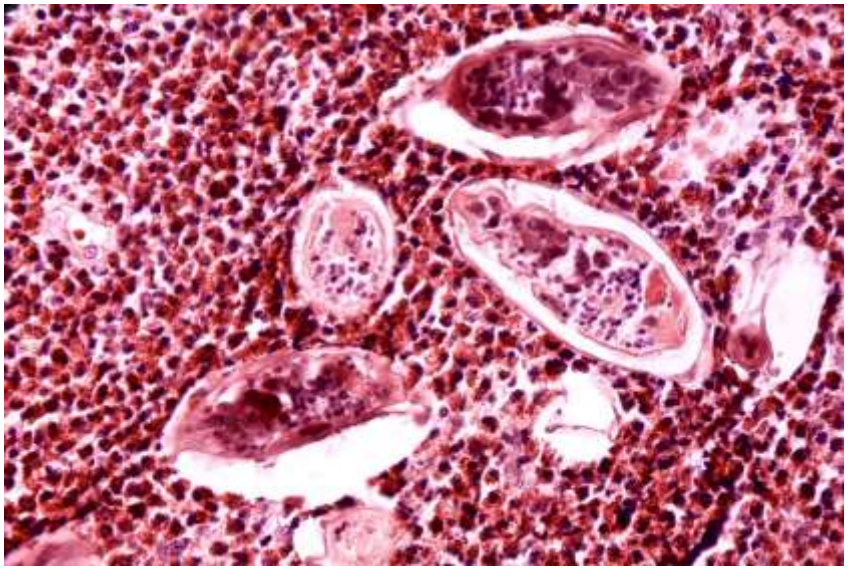
Brain

Cerebral schistosomiasis

Skin and kidney

Clinical picture

Stages	Clinical aspect	Manifestations
Early	**1. Cercarial dermatitis** **2. Schistosomular migration**	As mentioned before
Late	**3. Chronic urinary schistosomiasis**	**Oviposition** in the vesical plexus ➜ terminal haematuria, dysuria, and frequency
Advanced complications	1) Obstruction of the urinary tract ➜ hydroureter and hydronephrosis 2) Urinary stones 3) Recurrent bacterial urinary infections 4) Egg embolism ➜ Lung & CNS 5) Bladder cancer	



***S. haematobium* eggs in bladder tissue**

Calcified bladder wall

Calcified bladder

Laboratory diagnosis

Direct

1) Detection of eggs in the urine by direct smear or concentration .

2) Bladder biopsy by cystoscopy in chronic stage

Indirect

1) Intradermal test.

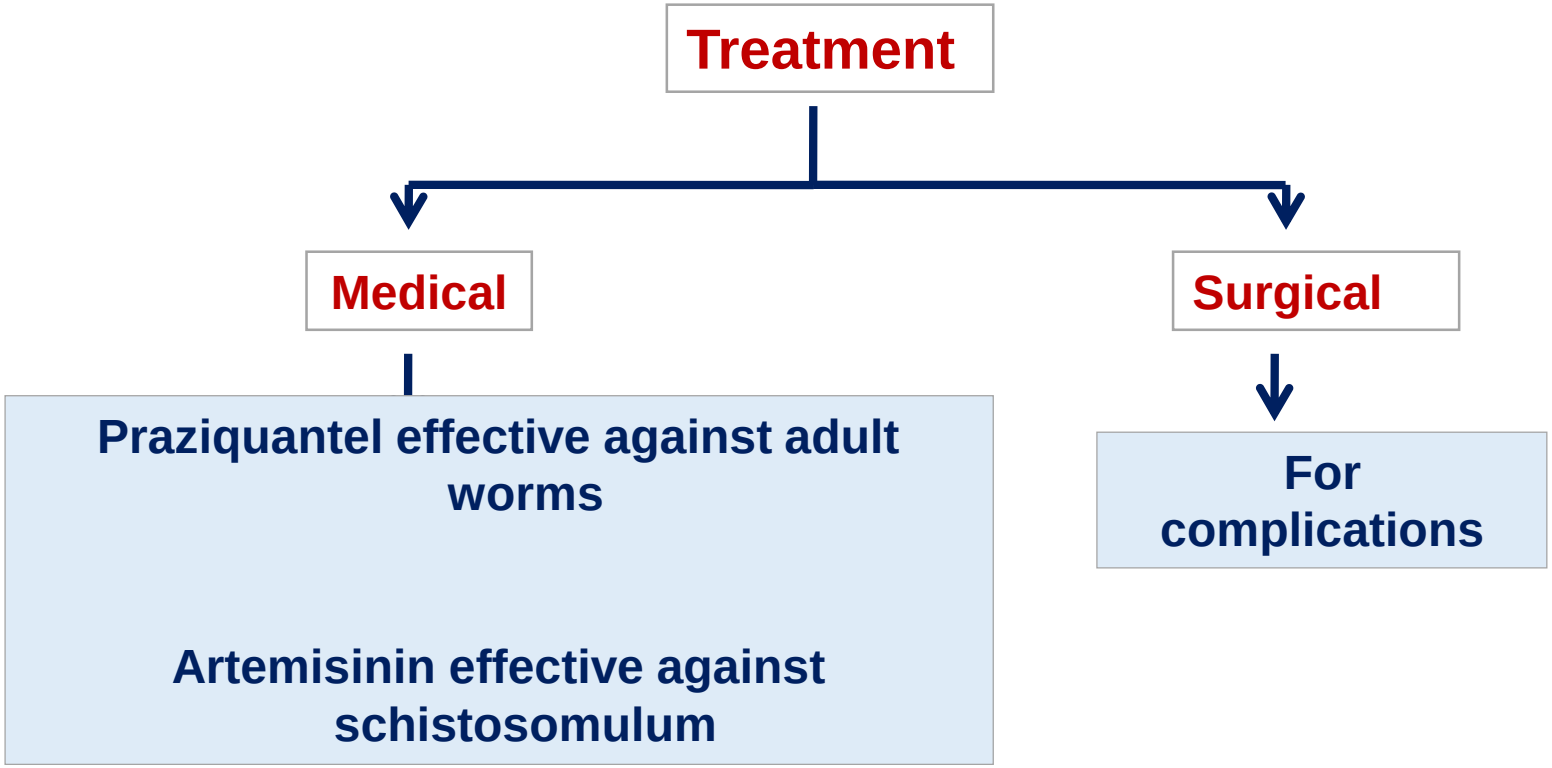
2) Serological tests : to detect antibodies IHAT, CFT, and ELISA.

3) Recently: Detection of circulating *Schistosoma* antigens in serum or urine by using of monoclonal antibodies

4) Anaemia:-

- Iron deficiency anaemia due to blood loss.

5) Eosinophilia


Treatment
Medical
Surgical
Praziquantel effective against adult worms
Artemisinin effective against schistosomulum
For complications

Trichomonas vaginalis

Trichomonas vaginalis

Urogenitale flagellate

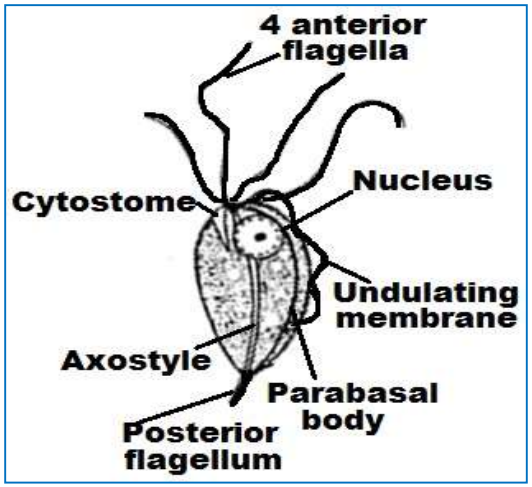
❖**Geographical distribution:** Cosmopolitan.

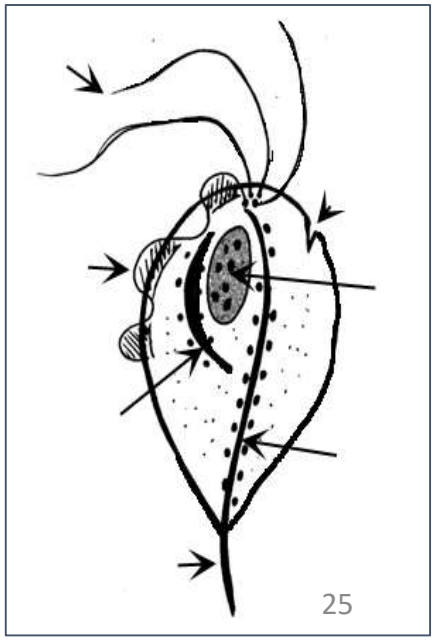
❖ **Habitat:** Vagina, cervix and urethra in female & prostate and urethra in male.

❖ **D.H:** Man

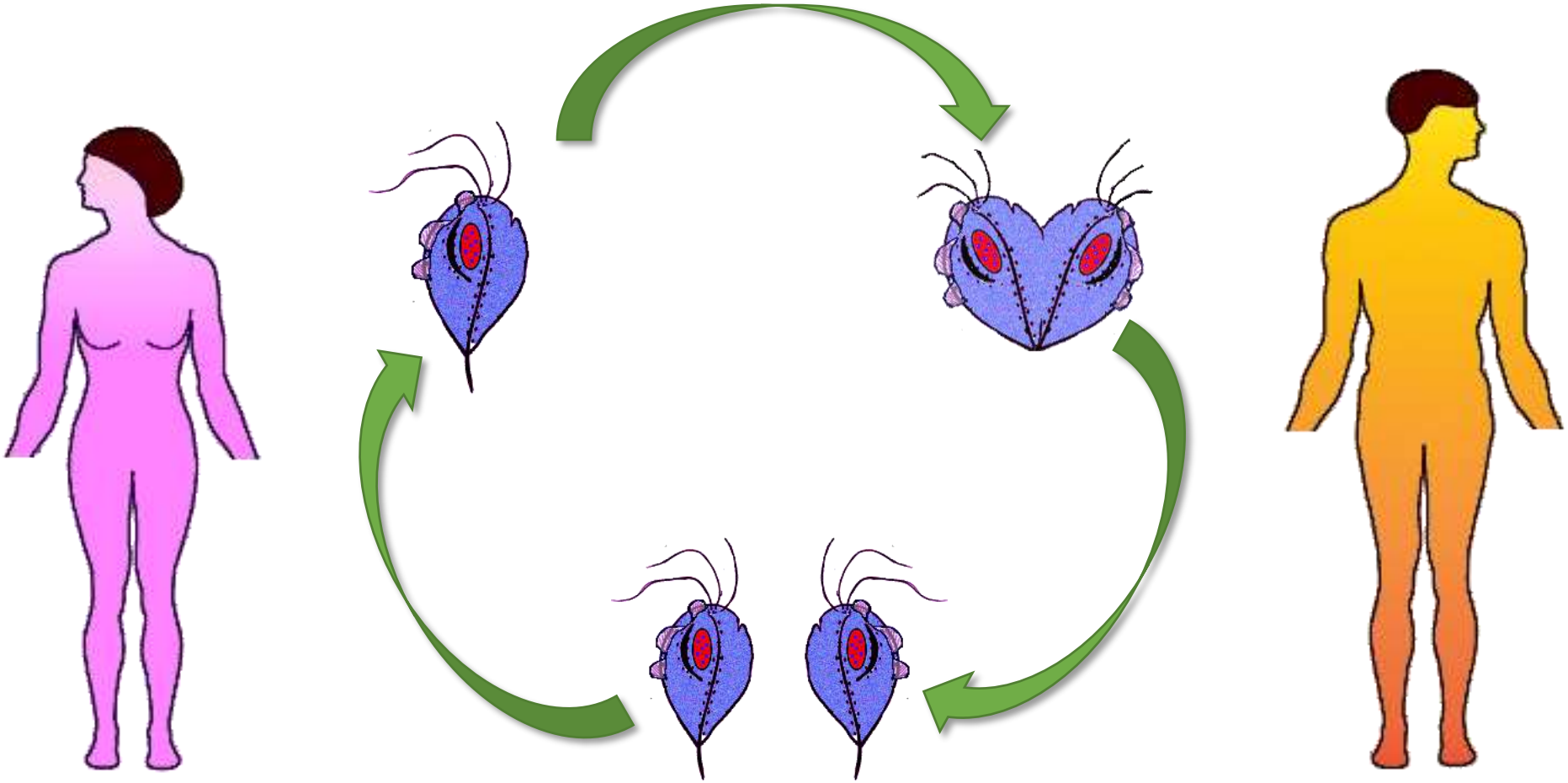
Morphological characters

Trophozoite (D.s & I.S)





LIFE CYCLE OF *TRICHOMONAS VAGINALIS*



Trophozoites multiply by longitudinal binary fission

Mode of transmission

1- Direct by sexual intercourse.

2- Indirect by contaminated towels, toilet seats and under wears.

3- Babies may be infected from mother during birth.

Pathogenesis

Disease: Trichomoniasis **(sexually transmitted disease)**

Normally the vaginal acidity (pH 3.8-4.5) is the protective barrier against infections. This acidity is maintained by the action of ***Doderlein bacilli*** (vaginal bacterial flora) on the **glycogen** present in the vaginal epithelium leading to the production of **lactic acid.**

Due to **excess use of vaginal disinfectants or prolonged use of antibiotics** the ***Doderlein bacilli*** decreases ➲ decrease the production of lactic acid ➲ decrease the vaginal acidity (pH 5-7) which becomes suitable for the growth of ***T. vaginalis***.

The trophozoite exists either free in the vaginal cavity or adherent to the vaginal epithelium causing its damage ➲ **micro-ulcerations** which increases the woman's susceptibility to an **HIV infection (AIDS) and other sexually transmitted diseases.**

Clinical pictures

In women

Asymptomatic infection

The trophozoites remain in the vagina without causing manifestations.

Symptomatic infection

a) **Vaginitis:** Accompanied with a frothy yellowish - green odorous vaginal discharge, vulvar irritation, itching and soreness.

b) **Urethritis:** Accompanied with frequency of micturation and dysuria (pain during urination).

In men

Asymptomatic infection

Is common. Men harbour the organism in their urogenital system and usually have no symptoms at all.

Symptomatic infection

Includes urethritis, prostatitis with white discharge and dysuria.

In neonates

Pneumonia and conjunctivitis

Laboratory diagnosis

- **Direct**
- **Indirect**
  - **PCR**

a) Microscopic:

In women:

1-Wet film preparation from vaginal discharge, vaginal scraping or sedimented urine for trophozoite.

2- Vaginal swab lies in a tube containing 1 ml saline.

In men:

***T. vaginalis* trophozoite can be detected in urethral discharge, prostatic secretion or sedimented urine.**

b) Culture: More sensitive than microscopic examination but not widely used.

c) Direct immunofluorescent antibody staining.

Treatment

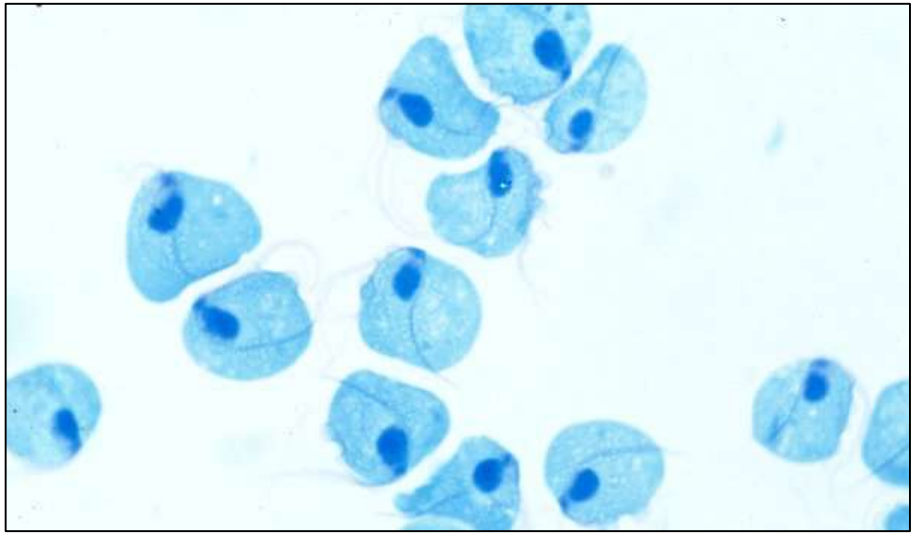
1-Systemic

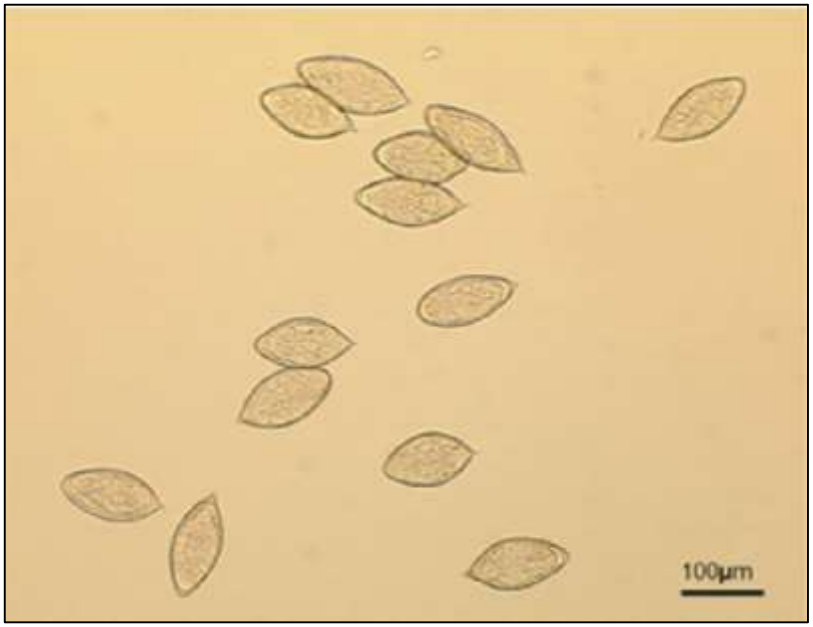
Metronidazole (Flagyl)

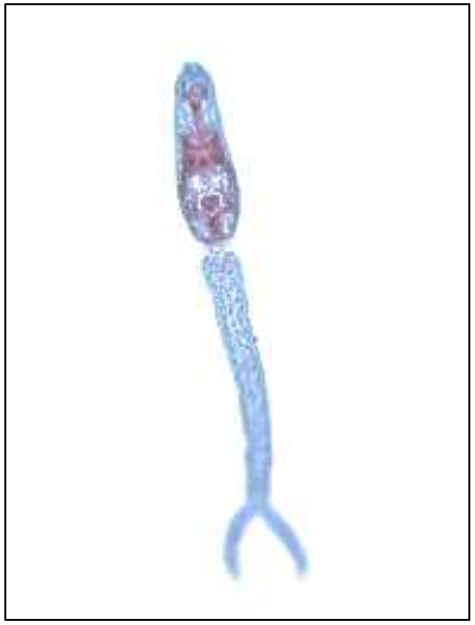
2-Local

- Flagyl vaginal insert.
- Acidifying vaginal douches: Lactic acid douche to maintain the acidity of the vagina.


?
Quiz
Time







Identify ?????

Identify ?????