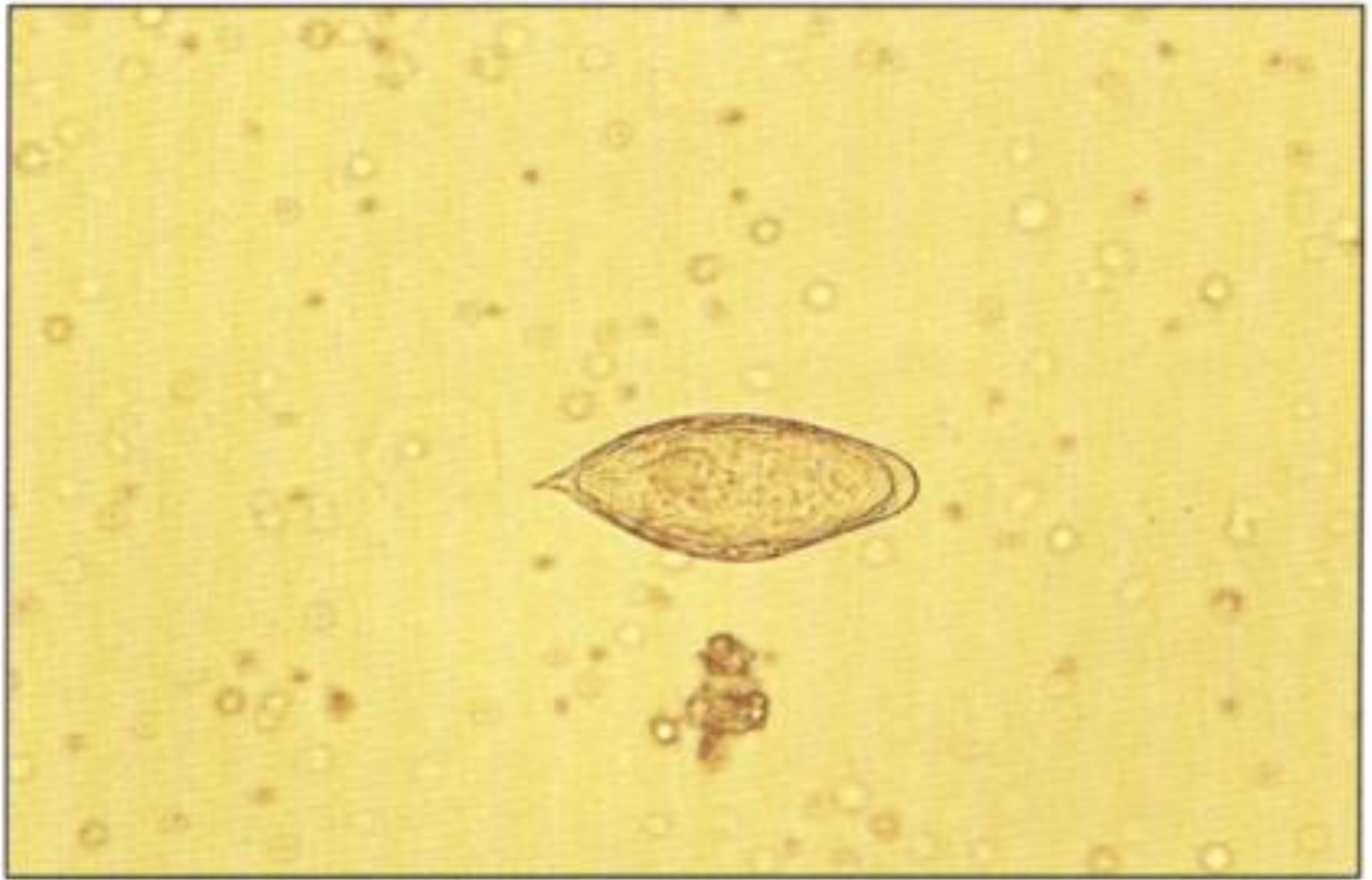


**THE CLINICAL PICTURE,
DIAGNOSIS AND
TREATMENT OF
SCHISTOSOMIASIS**

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EPIDEMIOLOGY OF URINARY SCHISTOSOMIASIS

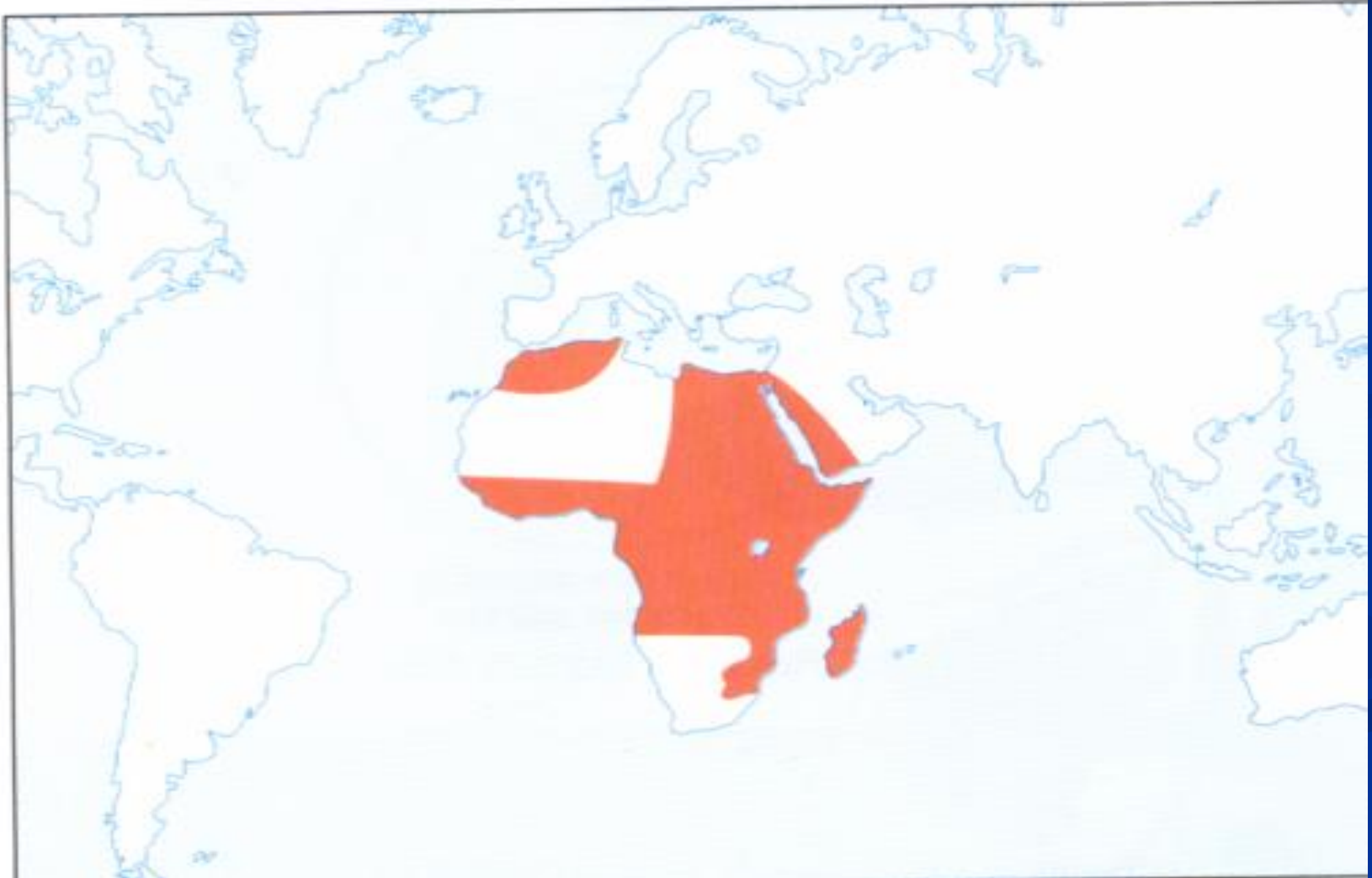
- *S. Haematobium* - the fluke responsible for urinary tract manifestations is endemic in Africa, S.W. Asia and Middle East countries
- The Bulinus snail acts as intermediate host
- The spread of disease to non endemic areas by travelers / migrant worker
- Associated with dams, irrigation schemes rivers because snails breed in fresh water



(g) *Schistosoma haematobium* ovum

Distribution

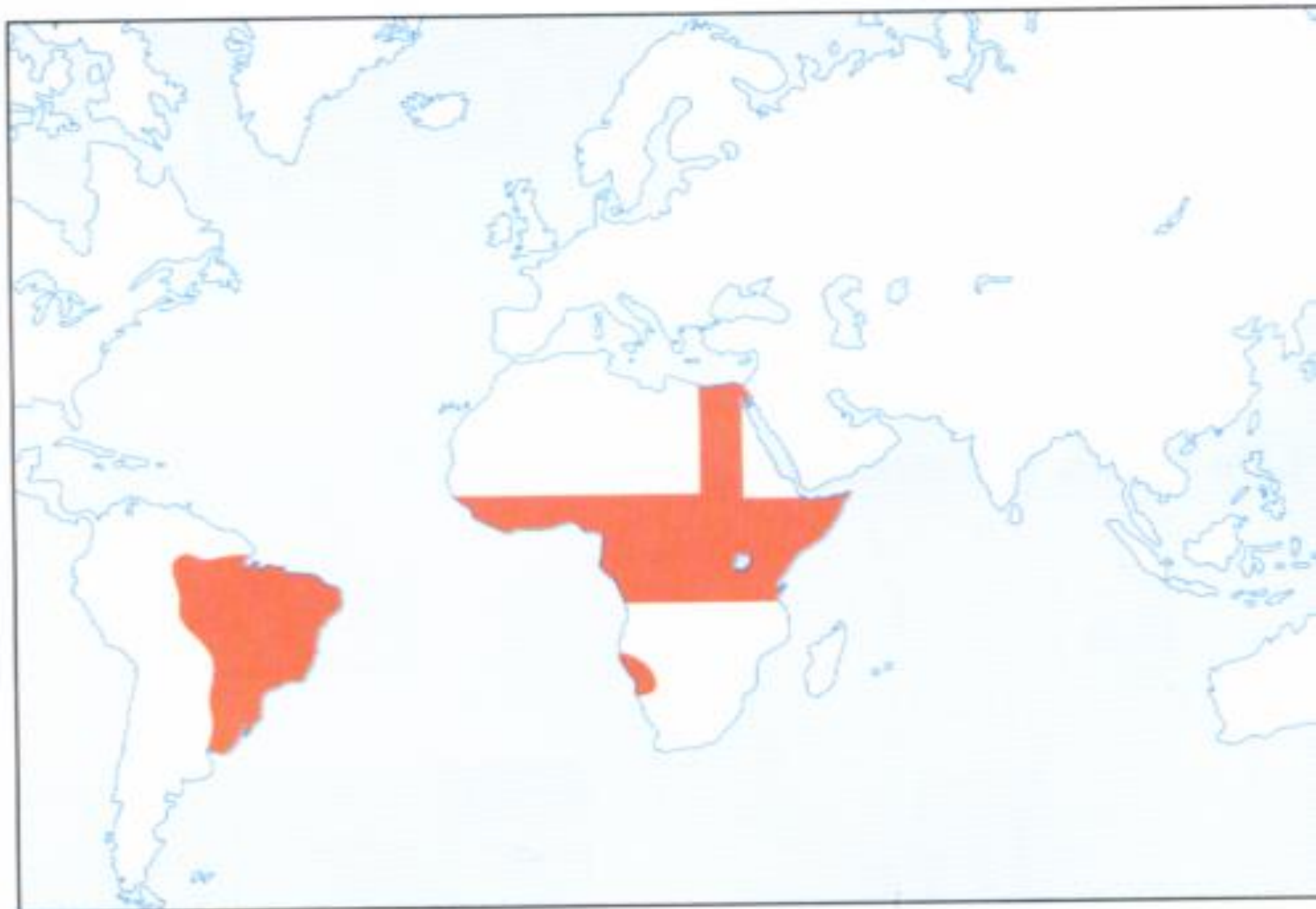
S. haematobium: 78 million





(d) *Schistosoma mansoni* ovum

S. mansoni: 57 million



CONTINUATION OF EPIDEMIOLOGY

- The linear rise (with increasing age) in both prevalence and intensity of infection. Pick infection levels found among children aged 12 to 15 years.
- Infection with *S. Haematobium* has the highest prevalence of associated disease.
- Is a cause of death in 1 to 2 per 1000 individuals per year, and is estimated to contribute, through renal disease, to 1 to 3 % of deaths.

THE CLINICAL SYNDROMES OF URINARY SCHISTOSOMIASIS

- Cercarial dermatitis [swimmers itch or kabure itch]
- Katayama syndrome [appear 3-6 weeks after the penetration of cercarie. Presenting with fever, cough, headache, sweating, abdominal pains, tender hepato- splenomegaly, high eosinophilia]
- The commonest presentation is terminal haematuria [sometimes uniform or microscopic]
- Haematuria initially painless

CONTINUATION OF CLINICAL SYNDROME

- Burning micturation and hypogastric pain
- Ureteric colic [due to the passage of coagulated blood from a source of bleeding situated high up in the ureter]
- Pain and burning sensation in the epigastrium- due to involvement of the submucosa of the stomach
- High urinary blood and protein levels are related to intensity of infection and lower urinary tract pathology

COMPLICATIONS OF S. HAEMATOBIIUM

- Pyelonephritis, glomerulonephritis, nephrotic syndrome
- Long standing urinary schistosomiasis lead to reduced bladder capacity
- Ureters liable to stenosis especially around their orifices causing partial obstruction to urine flow
- Secondary bacterial infection may occur
- Hydroureter, hydronephrosis (due to ureteral fibrosis), pyelonephrosis, bladder / ureter calcification

CONTINUATION OF COMPLICATIONS

- Carcinoma of bladder [squamous cell type]
 - Usually the transitional type of carcinoma is seen.
 - Fetal sign on X-ray due to bladder calcification
- Other system involvement
 - Pulmonary hypertension, fibrosis, cor-pulmonale
 - Myelitis / spinal tumour / space occupying lesion due to granuloma
 - Infertility in women from granulomata blocking the fallopian tubes
 - Salmonella septicaemia [organisms incorporated into adult worms]

COMPLICATIONS OF SCHISTOSOMIASIS MANSONI

- Portal hypertension due to periportal fibrosis / Symmer's disease
 - Hematemesis
- Pericardial fibrosis → constrictive pericarditis
- Lung fibrosis → cor pulmonale
- Granulomas in the CNS are common with *S. japonicum*
 - Transverse myelitis → eggs in the spine (common in Katayama fever)
- Oesophageal varices
- Splenomegaly
- Ascites
- Granulomatous lesions in the brain, spinal cord and lungs



DIAGNOSIS OF URINARY SCHISTOSOMIASIS

- Urine sedimentation [passed around mid-day], examine for ova *S. Haematobium*
- Miracidal hatching test
 - Positive hatching test means the eggs are still alive
- Rectal mucosal biopsy
- Cystoscopy- demonstrate fibrosis, polyps haemorrhagic spots, and later “sandy patches” [dead eggs and calcified areas]
- Bladder wall biopsy will confirm carcinoma
- Straight x-ray abdomen show bladder calcification [foetal head calcification]

FURTHER INVESTIGATIONS

- I.V.U.
- Chest x-ray
- Barium studies
- Myelography
- Immunodiagnostic tests [skin test, complement fixation test, gel diffusion] provide supportive evidence
- Haemogram [eosinophilia in early stages of the disease but constant finding in the bone marrow]

LABORATORY DIAGNOSIS FOR *S. MANSONI*

- Stool examination directly
- Concentration method using formalin-ether or Kato-test
- Rectal snip
 - Golden brown egg – *S. mansoni*
 - Tarry black egg – dead eggs
- Serology – ELISA test (using soluble egg antigen)

TREATMENT OF URINARY SCHISTOSOMIASIS

- Drug of choice [currently recommended by W.H.O.]
Praziquantel – dose 40 mg/kg, once after meal
[expensive]
- Side effects – slight abdominal discomfort, nausea, headache, slight drowsiness
- Metrifonate [organophosphate group]
-dose 10mg/kg orally once at night, 3 courses at 2 weeks interval

Artemisinin is active against schistosomulae (also the drug of choice for cerebral malaria)

CONTINUATION OF TREATMENT

- Side effect of Metrifonate due to depressed acetylcholine levels in blood
- Thus cholinergic symptoms- fatigue, muscle weakness/tremor, sweating, abdominal colic, diarrhoea , vomiting
- Due to recent widespread resistance to Metrifonate W.H.O. does not recommend its use
- Antischistosomal drugs are mutagenic thus carcinogenic; not used in pregnancy

CONTROL MEASURES FOR SCHISTOSOMIASIS

■ REDUCED EXPOSURE TO INFECTED WATER

NON-SPECIFIC MEASURES INCLUDE:-

- Provision of clean drinking water, uncontaminated water for washing and recreation
- Reduce water contact by fences, bridges

CONTINUATION OF CONTROL MEASURES

- SPECIFIC MEASURES INCLUDE REDUCED INFECTION IN WATER:

- Control of snails

- [I] reduction of snail breeding

- [II] chemical control using molluscides

- [III] biological methods [fish, competitor snails]

CONTINUATION OF CONTROL MEASURES

- **REDUCE CONTAMINATION OF WATER**
 - **NON-SPECIFIC MEASURES INCLUDE:-**
Building and use of latrines so as to avoid defecating or urinating in and around open water.
 - SPECIFIC MEASURES INCLUDE:-**
Mass treatment of the community, education of the community, individual diagnosis and treatment.

CONTINUATION OF CONTROL MEASURES

- Artemether may be used in both control and treatment of schistosomiasis in areas where there is no regular malaria transmission
- Combination of both Praziquantel and Artemether may be used
- Praziquantel affects adult worms while Artemether kill Schistosomula
- Vaccine development in progress