

Lymphatic Filariasis

Presented by

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Lymphatic Filariasis

Wuchereria bancrofti

❖ Geographical distribution

1. Tropical and subtropical regions (West & Central Africa, South America).
2. Far East (India, China & Japan).



❖ Habitat

Lymph nodes and lymph vessels of lower limbs, external genitalia and trunk (especially below diaphragm).

❖ D.H Man

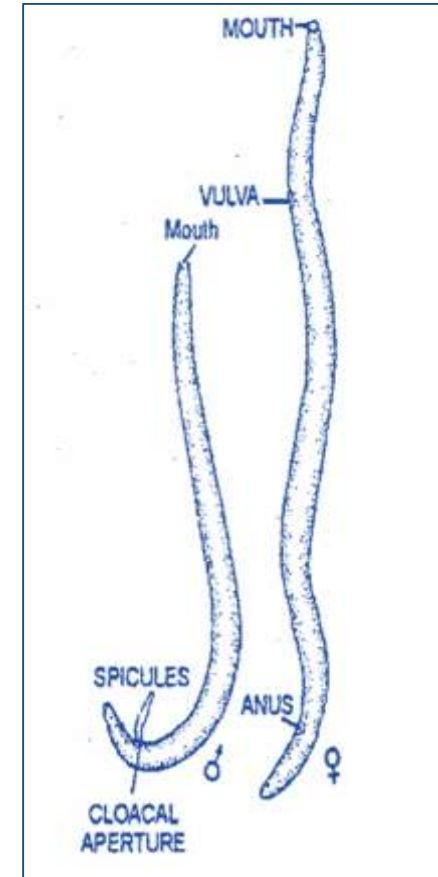
I.H (vector) Mosquitoes (*Culex*, *Anopheles*, and *Aedes*).

Morphological characters



Adult

- Long thread like.
- Female deposits larvae called microfilaria.
- Male (4 cm) is shorter than female (8-10 cm).

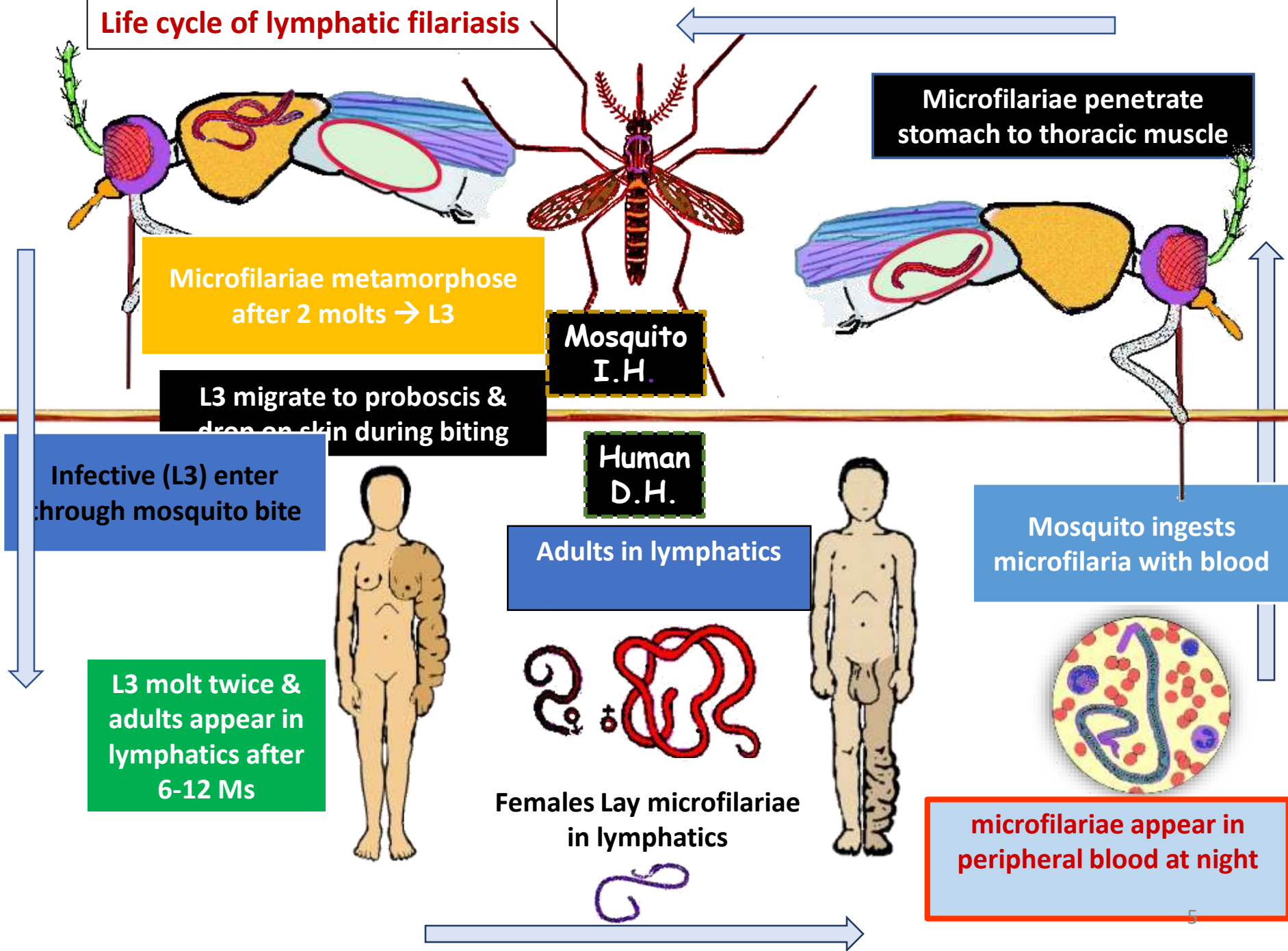


Microfilaria (D.S)



Microfilaria is 250 μm x 8 μm , body with smooth curves, loose sheath with deeply stained nuclei with empty ant. and post. ends & have nocturnal periodicity (10 p.m. to 2 a.m.).

Life cycle of lymphatic filariasis



Microfilariae penetrate stomach to thoracic muscle

Microfilariae metamorphose after 2 molts → L3

Mosquito I.H.

L3 migrate to proboscis & drop on skin during biting

Infective (L3) enter through mosquito bite

Human D.H.

Adults in lymphatics

L3 molt twice & adults appear in lymphatics after 6-12 Ms

Females Lay microfilariae in lymphatics

Mosquito ingests microfilaria with blood

microfilariae appear in peripheral blood at night



Mode of infection

Mosquito bites the skin for blood meal then the infective stage (3rd stage filariform larva) in the mouth part is inoculated in the skin through the bite wound.

Diagnostic Stage

loosely sheathed microfilaria in the peripheral blood at night.

Infective stage

Third stage filariform larva



Pathogenesis and symptomatology

Disease: Bancroftian filariasis or elephantiasis.

➤ Pathological lesions occur in the lymphatic system, due to the presence of **adult worms** (living or dead) but **not due to microfilariae**.

1. Asymptomatic phase:

Occurs in endemic areas where patients remain asymptomatic but with patent microfilaria in their blood.



2- Acute inflammatory phase

Recurrent attacks of lymphangitis and lymphadenitis due to

Toxic products of living or dead adult worm

Mechanical irritation by adult worm

Allergic reaction to larvae, adult products or died worms

2^{ry} bacterial infection

Symptoms

fever, chills & headache

Local lymphangitis

Lymphadenitis

Affection of lymphatics of

epididymis and testes (epididimo-orchitis)

Scrotaum (varicocoele & hydrocoele)

spermatic cord (funiculitis)

Vulva



3- Obstructive (chronic)phase

✓ The obstruction of lymph flow is due to

Blockage of the lumen by worms.

Proliferation of the endothelial lining

Fibrosis & stenosis of lymph vessels

Fibrosis of lymph nodes draining the area.

✓ Effects of obstruction

The lymph vessels become dilated, distended & varicosed

Oedema

Rupture of distended vessels

Elephantiasis

In renal pelvis or urinary bladder
⇒ Chyluria (milky urine)

In pleural sac ⇒ chylothorax

Peritoneal sac ⇒ chylous ascitis

Tonica vaginalis of testis ⇒ chylocele

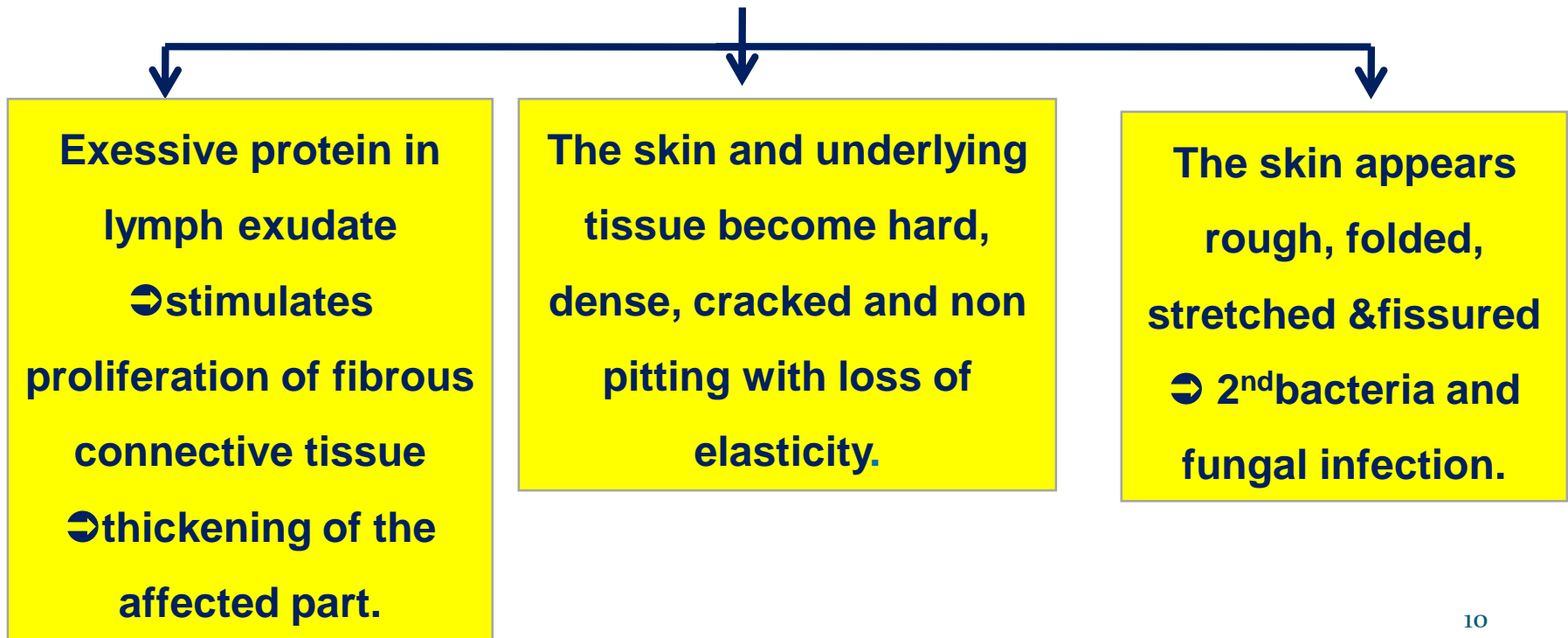
Intestine ⇒ chylous diarrhea



Elephantiasis

- It occurs after a long duration (5-10 years).
- It is usually affected most dependent parts e.g: **Legs, scrotum, & vulva.**
- **Blood sample is negative for microfilaria.**

Presented by





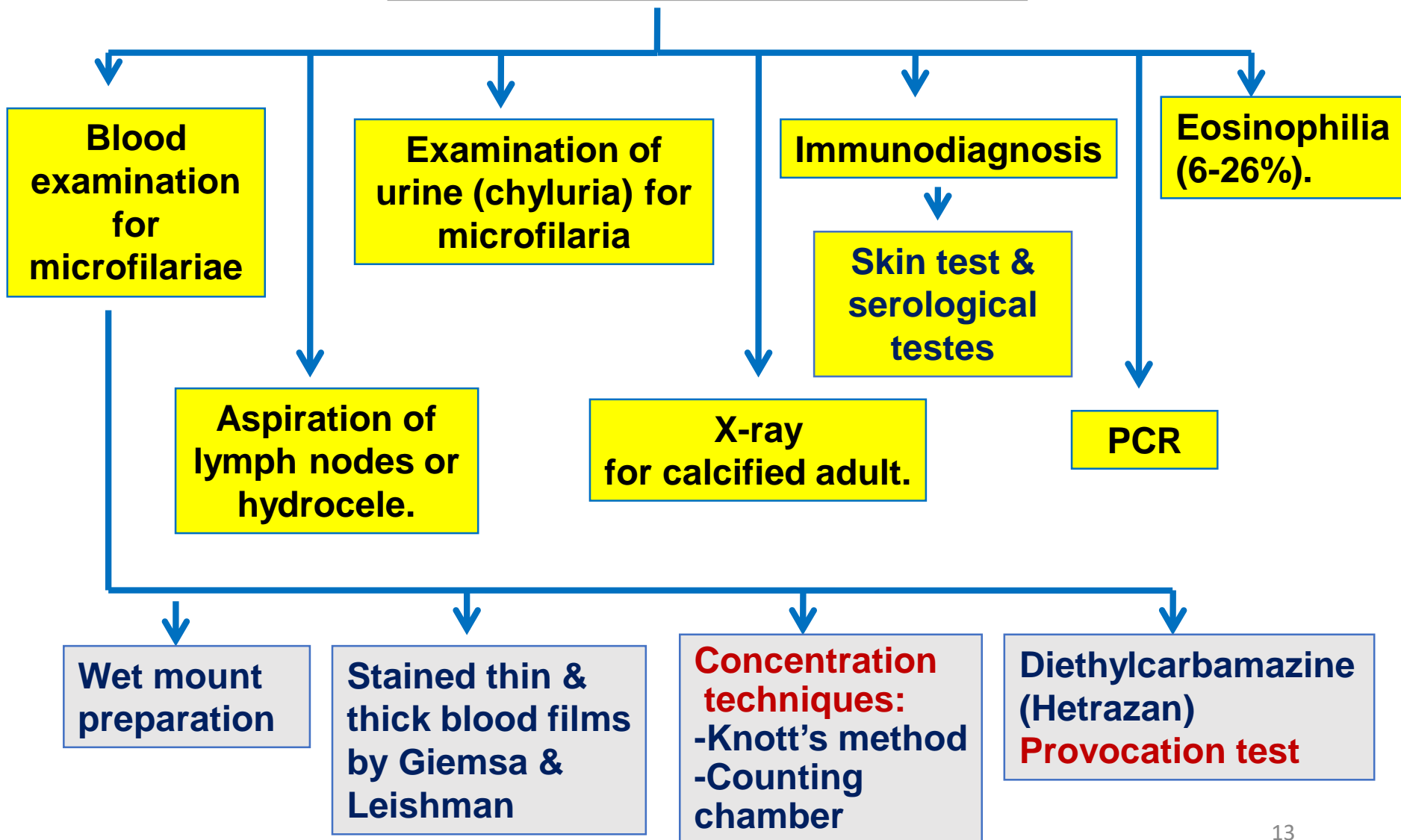


4-Tropical pulmonary eosinophilia (Occult filariasis)

1. Occurs in endemic areas of filariasis due to immunologic hyperresponsiveness to microfilaria.
2. No classical lymphatic pathology and no microfilaria in the blood.
3. The microfilariae are seen in the lung tissues.
4. Scattered **lung opacities** with asthmatic cough and wheeze.
5. **Marked eosinophilia** (3000 - 60.000 cells/ mm³) with **high IgE levels** and **high antifilarial antibody titer**.



Laboratory Diagnosis



Treatment



Early cases

Late cases

- 1) Diethylcarbamazine
(Hetrazan)
- 2) Antibiotics
- 3) Ivermectin
- 4) Corticosteroids

Surgical treatment



Toxoplasma gondii





- **Habitat:** intracellular in any tissue cells of the host except mature RBCs.

- **Trophozoite:** Crescentic, $5 \times 3 \mu$ with one pole more rounded.



- **Oocyst:** derived from cat $10 \times 12 \mu\text{m}$

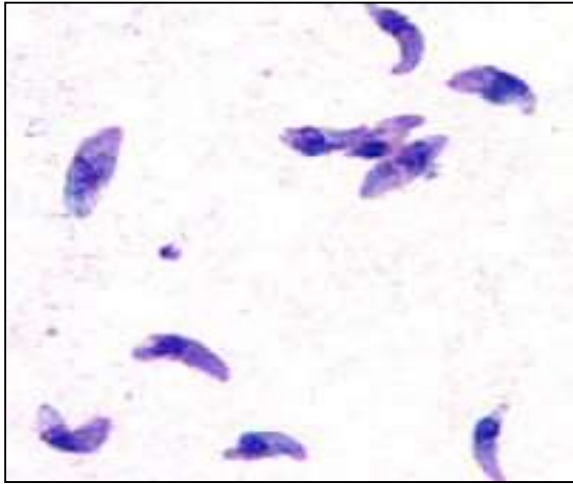


- **Pseudocyst:** without true cyst wall and the host cell contains rapidly dividing tachyzoite



- **True cyst:** with true cyst wall and slowly dividing bradyzoites





LIFE CYCLE OF TOXOPLASMA GONDII

DR/IBRAHIM

Sexual enteric cycle in D.H



Schizogony & Gametogony

Immature oocysts pass with faeces

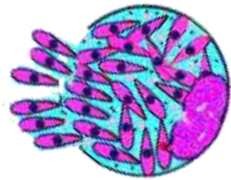


Mature within 3-4 days



Infective to all hosts by ingestion

intestine



Multiply in lymphoids of intestine

Spread to various organs

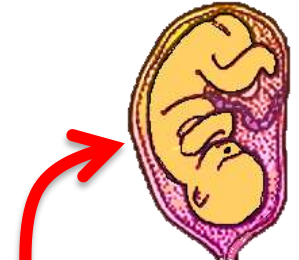
Pseudocysts and cysts are formed

Asexual exoenteric cycle in I.H



Infective to all hosts by ingestion

Congenital infection of the foetus by trophozoites





Modes of infection

(1)- Congenital (transplacental)

when the mother is infected for the 1st time during pregnancy.

(2)- Acquired

Ingestion of undercooked meat with pseudocysts and cysts e.g. beef, pork and lamb.

Ingestion of oocyst in food and drink directly or indirectly by flies.

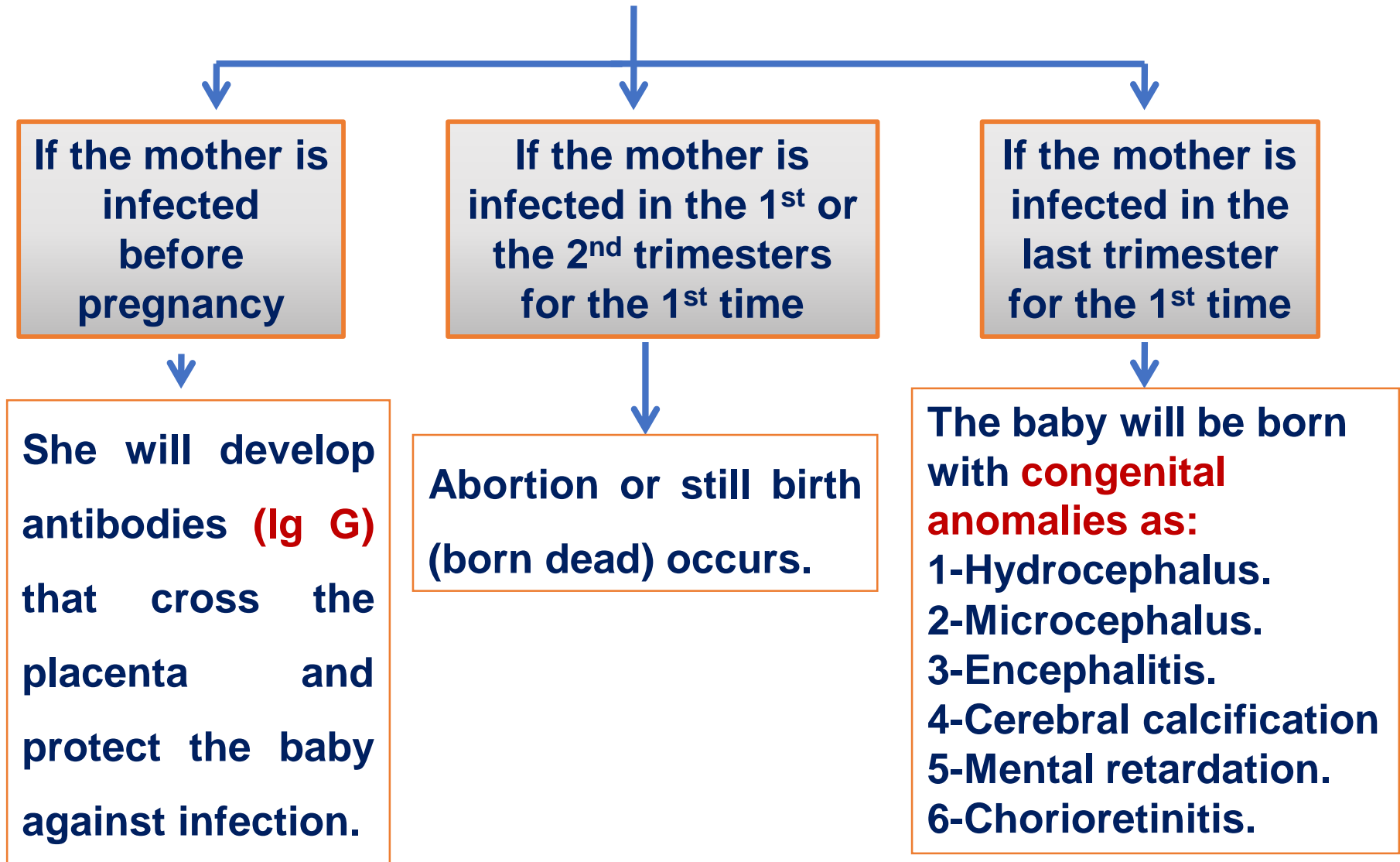
Inhalation of oocysts with dust infected with cat faeces

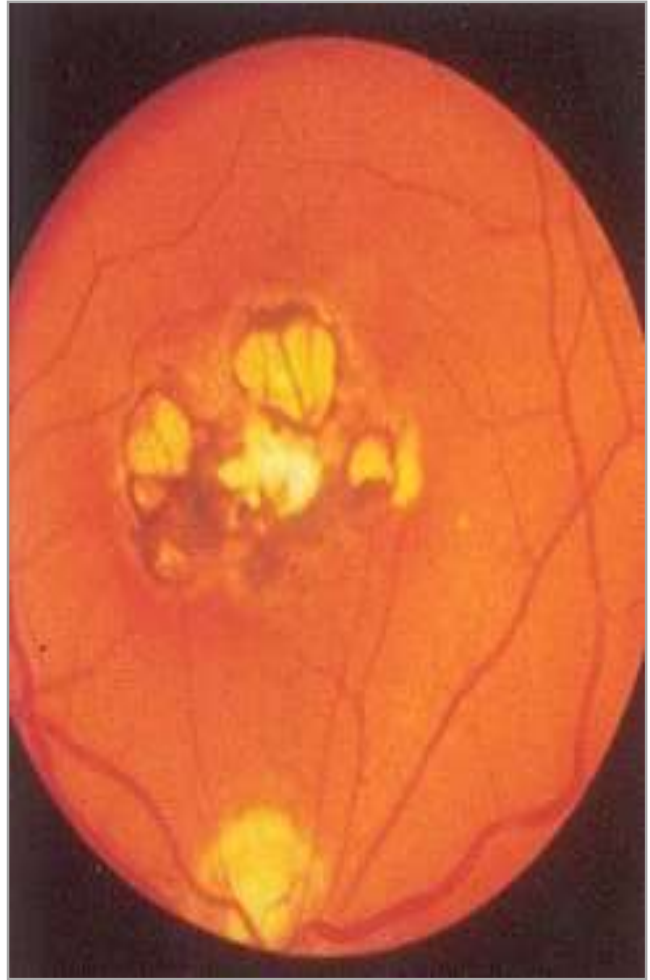
Blood transfusion & tissue transplants

Laboratory exposure to infection with trophozoites



(A)- Congenital toxoplasmosis







(B)- Acquired toxoplasmosis

Immunocompetent patient

- **Glandular form** with fever and enlarged liver, spleen and lymph nodes and sore throat.
- **Acute exanthematous form** with high fever, skin rash and L.N enlargement.

▪ **Latent cysts:** in the eye, brain and muscles which are asymptomatic

Immunocompromised patient

- If the immune system is suppressed, dormant cyst become reactivated resulting in flare up & possibly dissemination of the infection (**Reactivation**).
- Most cases present with **CNS manifestations** (encephalitis, brain abscess, meningitis), **myocarditis&pneumonia**



Laboratory diagnosis

Direct methods

▪ **Examination of biopsy** from enlarged lymph nodes.

▪ **Samples from blood, CFS or bone marrow** for detection of trophozoites, pseudocysts.

Indirect methods

Immunodiagnosis

- 1- I.D. test (toxoplasmin, Frenkel test).
- 2- Serological tests (for IgG & IgM): CFT, IHAT, ELISA, IFAT
- 3- Antigen detection by ELISA
- 4- Sabin- Feldman dye test (failure of trophozoites to stain with methylene blue in the presence of the antibodies)

PCR

CT scan & X ray

Lymphocytosis

IgG avidity test
?????



Treatment

- (1)- **Combination** of pyrimethamine (Daraprim) + sulphadiazine + Folic acid.
- (2)- **Spiramycine** used most often for pregnant women to prevent the infection of their child.
- (3)- **Atovaquone**: new drug.
- (4)- **Laser or cryotherapy** for chorioretinitis.
- (5)- **Systemic corticosteroids**.



- ***Wuchereria bancrofti* infection could be transmitted by blood transfusion ???? Why ???**
- ***Toxoplasma gondii* could be transmitted by autoinfection ??? Why????**
- **Though *Toxoplasma* is widespread in nature the disease is rare???**