



Department of Parasitology



بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ



**FAMILY:
SARCOCYSTIDÆ**



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Phylum: Apicomplexa

Class : Sporozoea

Subcl. : Coccidia

Order : Eucoccidiida

Subor. : Eimeriina (**Tissue & Intestinal Coccidia**)

Family : Eimeriidae Cryptosporiidae Sarcocystidae

Genus : Isospora Cyclospora Cryptosporidium Sarcocystis Toxoplasma

Species: belli
 hominis
 natalensis
 cayetanensis
 parvum
 hominis
 suihominis
 gondii



TISSUE CYST FORMING COCCIDIA

1-TOXOPLASMA GONDII

• DEFINITIVE HOST

Cats



• INTERMEDIATE HOSTS: Birds & mammals



Cycle

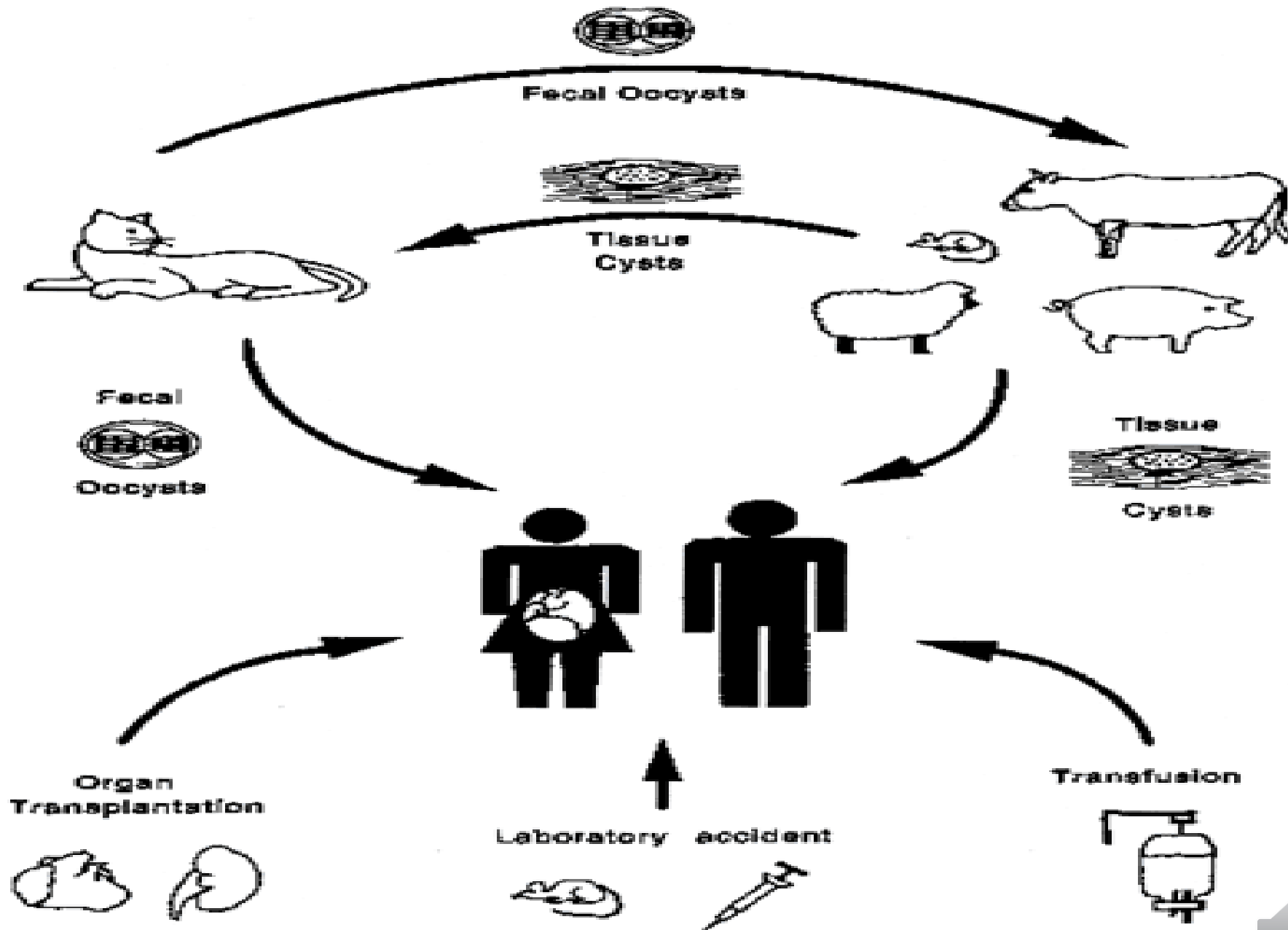
TRANSMISSION

- ☞ Cats can be infected in two ways:
 - The cat can directly ingest oocysts shed from another cat in the environment
 - The cat ingests cysts when eating infected intermediate-host prey

HUMAN TRANSMISSION

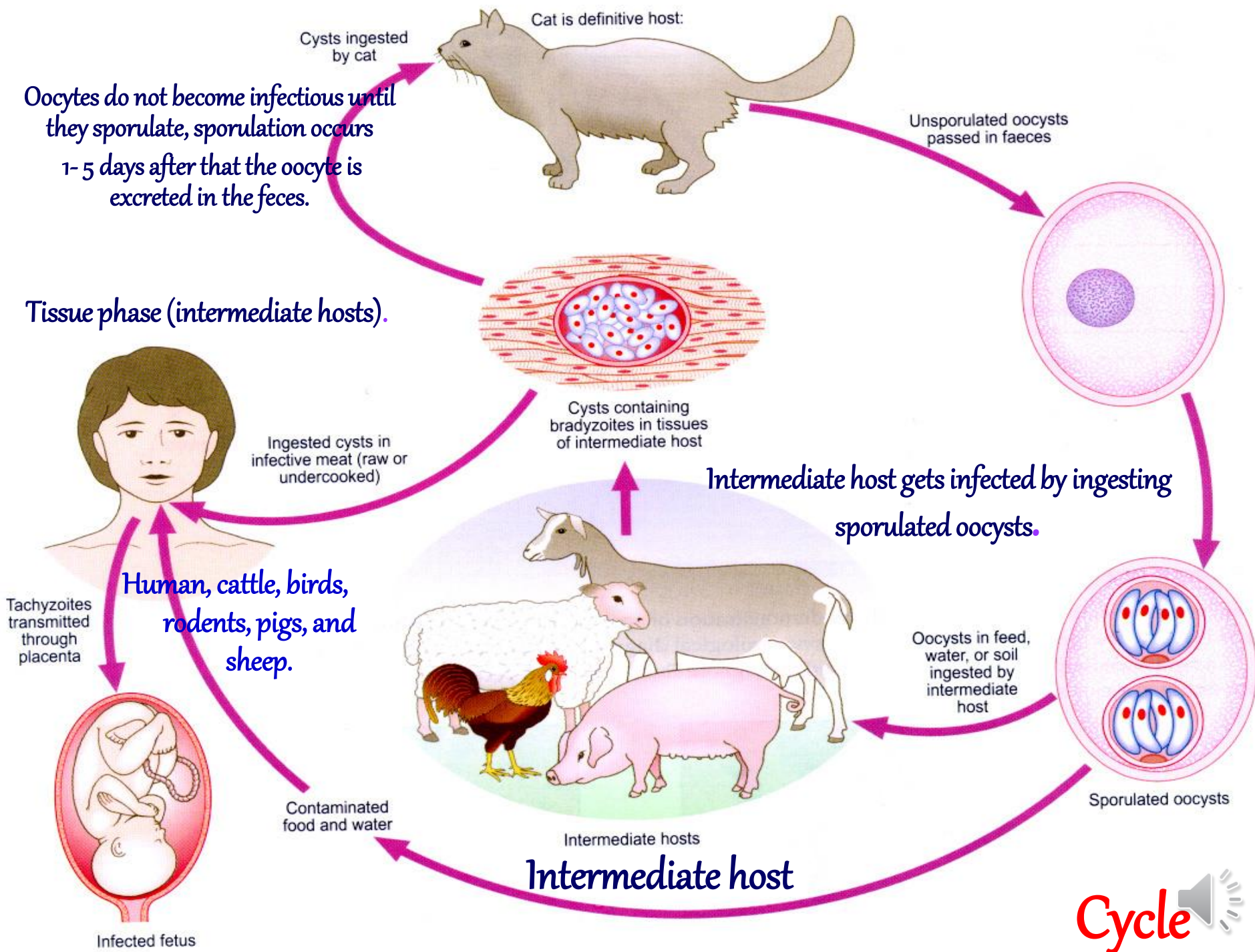
- By touching or coming into contact with infected cat feces.
- By eating contaminated raw or undercooked meat.
- By eating contaminated unwashed fruits or vegetables.
- By passing it to your unborn baby.
- By organ transplant or blood transfusion





Oocytes do not become infectious until they sporulate, sporulation occurs 1-5 days after that the oocyte is excreted in the feces.

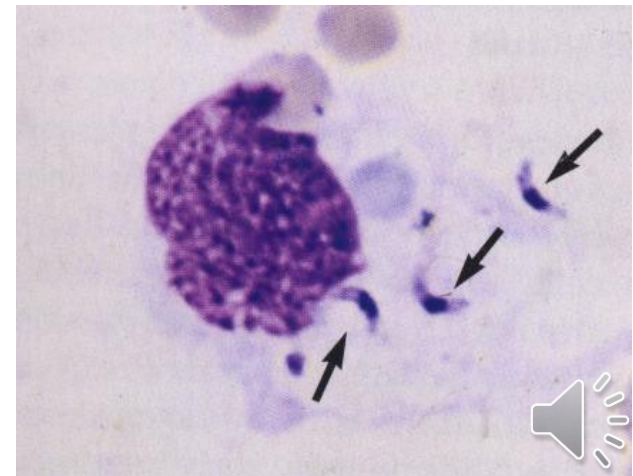
Tissue phase (intermediate hosts).



MORPHOLOGY

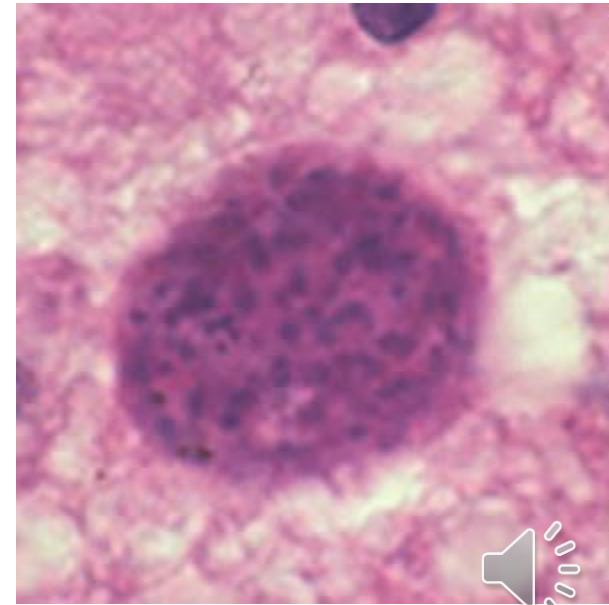
Tachyzoites (endozoites) and pseudocysts

- Crescent shape, 4 – 8 μm with single nucleus.
- It found in macrophages (pseudocyst) or any nucleated cell.
- Multiply rapidly.
- Pseudocysts can cross the placenta.



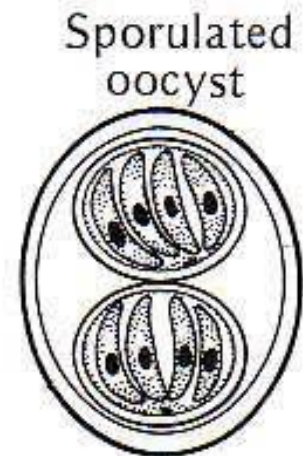
Bradyzoites (cystozoites) and true cysts

- 🕯 It can be found in any part of the body organs as commonly affected are brain, eye, heart.
- 🕯 Cyst wall is formed by the parasite and host.
- 🕯 Zoites in true cysts multiply slowly (bradyzoites)



Oocyst

- ♣ It formed in the small intestine of the cat and passed in cat faeces.
- ♣ Each sporulated oocyst contains 2 sporocysts and each sporocyst has 4 sporozoites



PATHOGENESIS

- 🕯 Host cells are destroyed by active multiplication of *parasites* producing **necrotic foci**.
- 🕯 Congenital infection often involves the **retina and brain**; focal chorioretinitis result in impaired vision

SYMPTOMS IN HUMAN

- Toxoplasma infection is common, but rarely produces symptoms in normal individuals.
- In **immunocompetent** adults, it may produce flu-like symptoms (fever, Headache, Muscle pain, Sore throat)+ rash (maculopapular rash that spares the palms and soles), sometimes lymphadenopathy (painless enlarged lymph nodes on head and neck).



Symptoms in immune suppressed persons:

Confusion

Fever, Headache

Retinal inflammation that causes blurred vision

Seizures



CONGENITAL TOXOPLASMOSIS SIGNS

1. Intracerebral calcification (*Toxoplasmic encephalitis*)
2. Chorioretinitis . (*Ocular toxoplasmosis*)
3. Hydrocephaly. }
4. Microcephaly . } **Congenital disease**
5. Convulsions.
6. Mental retardation .
7. Cardiomegaly .
8. Newborns may have punctate macules, ecchymoses, or “blueberry muffin” lesions.



Toxoplasmosis

Common Symptoms



fever



**fatigue, malaise,
and headaches**



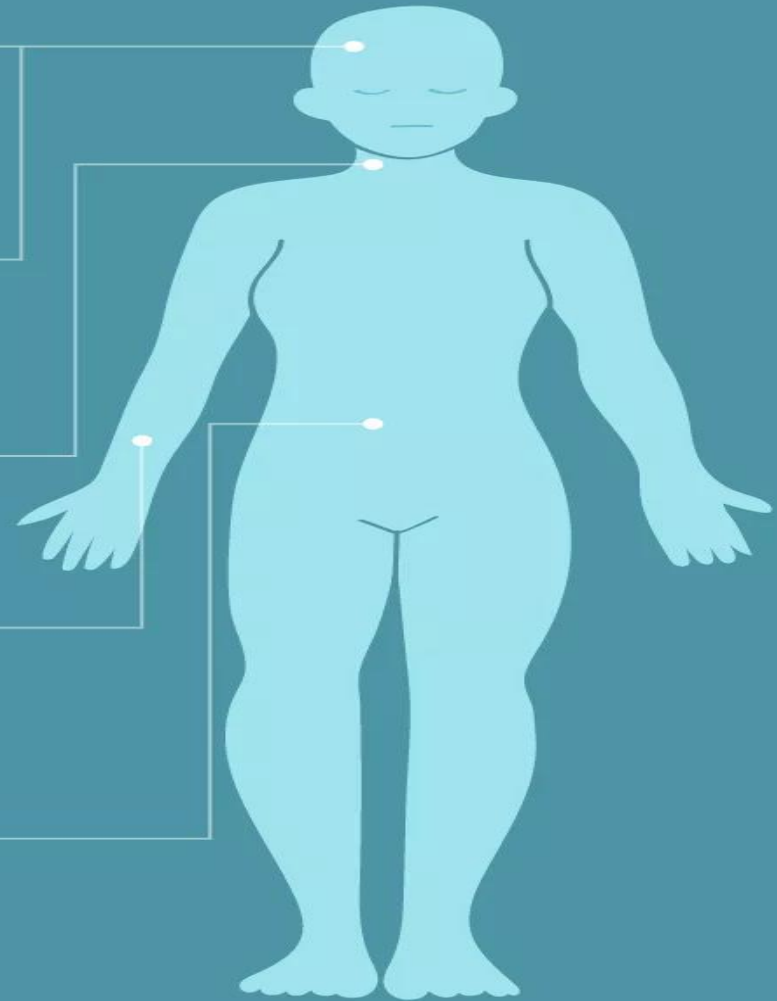
**swollen lymph
nodes**



myalgia



**congenital
impacts**



Laboratory Diagnosis

Direct – Demonstration of Parasite

1. Observation of parasites in patient specimens, such as bronchoalveolar lavage material from immunocompromised patients, or lymph node biopsy
2. Isolation of parasites from blood or other body fluids, by intraperitoneal inoculation into mice or tissue culture, mice should be tested for the presence of *Toxoplasma* organisms in the peritoneal fluid 6 to 10 days post inoculation.
3. In acute infection diagnosis is confirmed by identifying *Toxoplasma* Tachyzoites in stained preparations of: Lymph node aspirates, CSF, peritoneal aspirate, bone marrow or, plural fluids

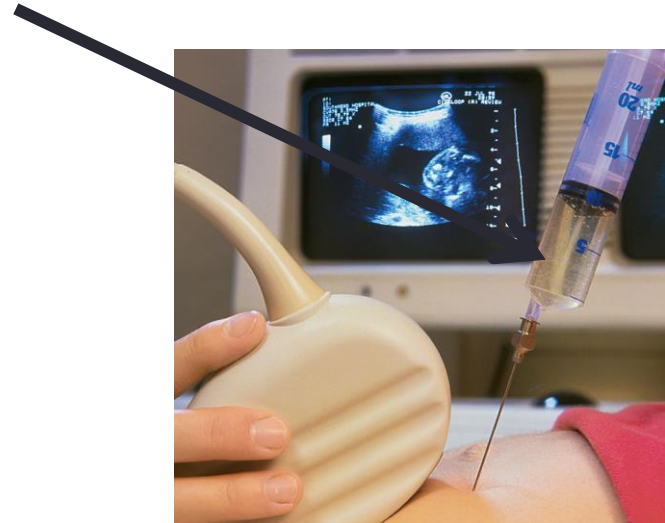


Serological tests as

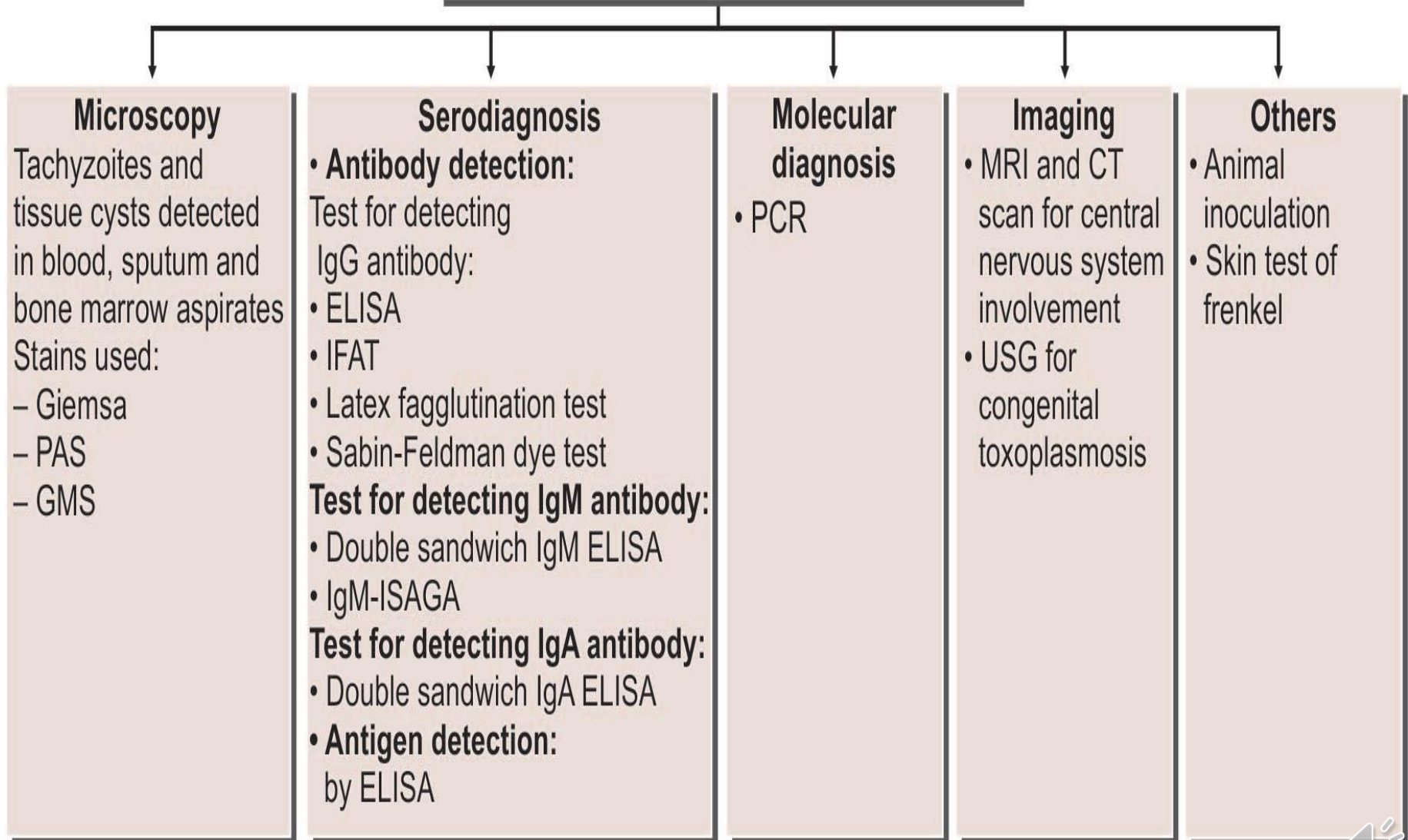
- ☞ Sabin Feldman dye test
- ☞ ELISA
- ☞ IHA

Amniocentesis

- Done around 16th week of pregnancy
- A long needle is inserted into the Amniotic sac and amniotic fluid is drawn.



Laboratory diagnosis of *Toxoplasma gondii*



PREVENTION

- Reduce Risk of Toxoplasmosis from Food
 - Reduce Risk of Toxoplasmosis from the Environment
 - Keep cats indoors.
 - Do not adopt or handle stray cats, especially kittens
- ☞ Pregnant women are advised to avoid cat litter, carefully handling uncooked and undercooked meat.



Don't!!!



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Do



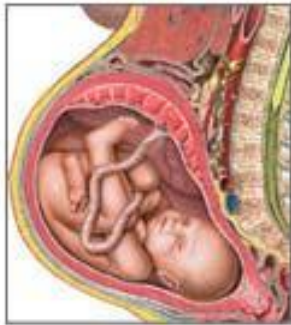
TREATMENT

- Acute infections benefit from Pyrimethamine plus Sulphadiazine. Spiramycin is a successful alternative.



SIGNS OF TOXOPLASMA IN ANIMAL

SUMMARY



A fetus may contract toxoplasmosis through the placental connection with its infected mother

The mother may be infected by:

Improper handling of cat litter



Handling or ingesting contaminated meat



Toxoplasmosis

CAUSED BY:
Toxoplasma gondii

SYMPTOMS:
Muscle Pain
Fever
Fatigue
Headache
Swollen lymph nodes
Rash

2ND LEADING CAUSE OF DEATH FROM FOODBORNE ILLNESS

TRANSMISSION
Eating under cooked meat
Drinking contaminated water
Swallowing parasite though contact with cat feces
Receiving infected organ or blood
Mother to child

PREVENTION
Cook food to safe temperatures
Peel/wash fruits thoroughly
Don't drink untreated water
WASH YOUR HANDS!



- **Contact with cat feces that contain the parasite. Cats who hunt or who are fed raw meat are most likely to harbor *T. gondii*.**
- **Eating contaminated food or drink contaminated water. Lamb, pork and venison are especially likely to be infected with *T. gondii*. Occasionally, unpasteurized dairy products also may contain the parasite.**
- **Use of contaminated knives, cutting boards or other utensils.**
- **Eating unwashed fruits and vegetables.**
- **Receiving an infected organ transplant or transfused blood. In rare cases, toxoplasmosis can be transmitted through an organ transplant or blood transfusion.**

