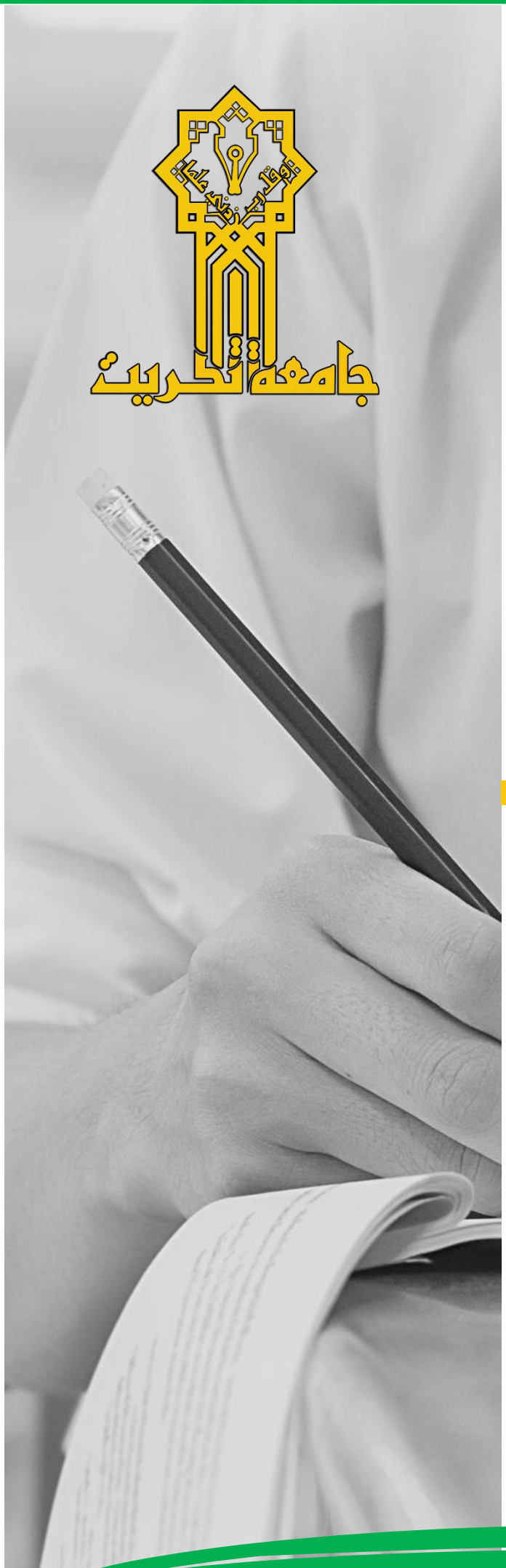


Tikrit University
College of Veterinary Medicine

Avian Toxoplasmosis

Subject name: Poultry Diseases

Subject year:2024

Lecturer name: Nawar Ali Jasim

Academic Email:pdvet10@tu.edu.iq

SCAN ME
Lecturers link

3-Avian Toxoplasmosis

***Definition:** It is a **zoonotic protozoal** parasitic disorder of mammals, **birds**, and reptiles affecting primarily the **central nervous system** but sometimes also the reproductive system, skeletal muscles, and **visceral organs**.

***Etiology:** caused by Toxoplasma gondii**.**

*Pathogenesis & Epidemiology:-

1-Infective oocyts of *T. gondii* are **produced** only by members of the **Felidae (Cat Family).**

2-More than **63 species** of **birds** and **27 species** of other animals become infected from **ingestion of oocysts** and develop **cysts** in tissues without passing oocysts in the feces.

3-Naturally occurring infections have been diagnosed in the **chickens**, turkeys, ducks, and many wild birds**.**

*Transmission:-

1-In **birds** and other nonfelines, only the extraintestinal **(tissue)** cycle of *T. gondii* is known.

2-Tachyzoites and **bradyzoites** may be **spread to birds** by carnivorous ingestion, and sporulated **oocysts are spread by cat feces.**

3-After ingestion, T. gondii tachyzoites**,** may be spread to the **brain,** eye**, heart, liver, lungs**, and nucleated red blood cells of birds.

4- Eight or more **tachyzoites** are produced in a **host cell**. A final generation of tachyzoites develops into **tissue cysts**, in which **bradyzoites** multiply**, Encysted bradyzoites** develop intracellularly in the **brain**, heart, eyes, and skeletal muscles but are **walled off** as immunity develops.

5- Cysts may persist for the life of the host or, if **immunity decreases**, **bradyzoites** may be released and a proliferation of tachyzoites renewed.

6- Arthropods such as **flies** and **cockroaches** can serve as transport hosts for the *Toxoplasma***.**
7- Earthworms ingest *Toxoplasma* oocysts and are a source of infection for chickens.

*Clinical Signs:

1-anorexia, emaciation, paleness and shrinking of the comb.
2-diarrhea, whitish feces**.**
3-drop in egg production**.**
4-incoordination, ataxia, trembling**, torticollis**, **blindness.**
5-high mortality**.**

*Gross lesion:-

1-Enlargement of liver and spleen**.**
2-Pericarditis, myocarditis**.**
3-Encephalitis.
4-**Ulcerative enteritis**.
5-necrotic hepatitis, lung congestion.

*Histopathology lesion:-

1- In chickens inoculated by **intracerebral** (IC) and (IM) routes, *Toxoplasma* tissue cysts were found in the **cerebrum**, **brain stem**, and **optic nerve**.

2- *Toxoplasma* cysts were found in myocardium, pancreas, and testes of chickens infected intramuscularly.

3- **Coagulation necrosis** and diffuse sinusoidal congestion were observed in the liver.

4- The **myocardium**, **pancreas**, and **testes** were diffusely infiltrated with **lymphocytes**, plasma cells, and **heterophils**.

5- In the **brain**, infection caused **lymphocytic lesions** and plasma
Cell-cuffing of blood vessels.

6- **Gliosis** of the lateral ventricle and around vessels of the cerebrum, brain stem, and cerebellum.

*Diagnosis:-

1- T. gondii may be **isolated** and **identified** by injecting **suspensions** of infected tissues into various species of laboratory animals, **chicken embryos**, or cell cultures.

2-Inoculation of mice **Intraperitoneal** or **Intracerebral** with suspensions of **brain** and **heart** are methods of isolation.

3-Serology test like ELIZA test.

4- Impression **smears** of peritoneal fluids or tissues stained with **Giemsa** or tissue sections of **brain**, liver, spleen, lung for direct **microscopic** observation of *Toxoplasma*.

5- *Toxoplasma* can be grown in the **chorioallantoic cavity** of 6–12-day-old embryonated chicken eggs.

6-Smears of the chorioallantoic membrane and yolk sac stained with Wright's stain reveal numerous free and intracellular toxoplasmas.

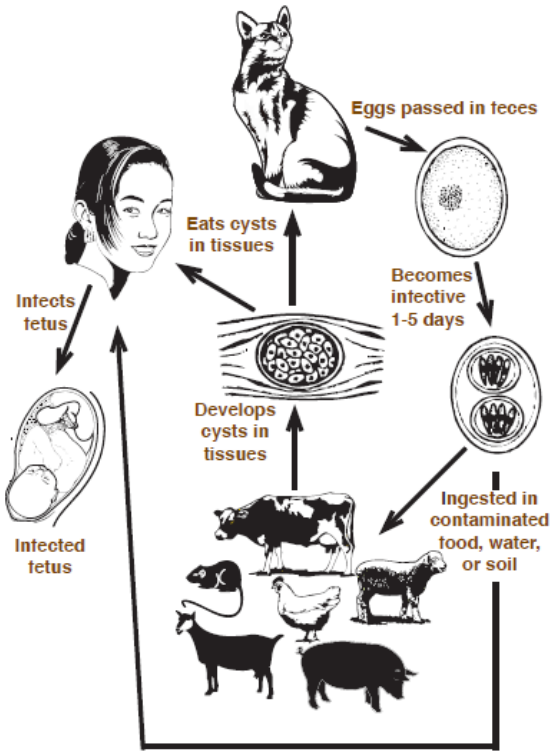
*Treatment, Prevention and Control:-

1-Chemotherapy has **not** been used control avian toxoplasmosis.

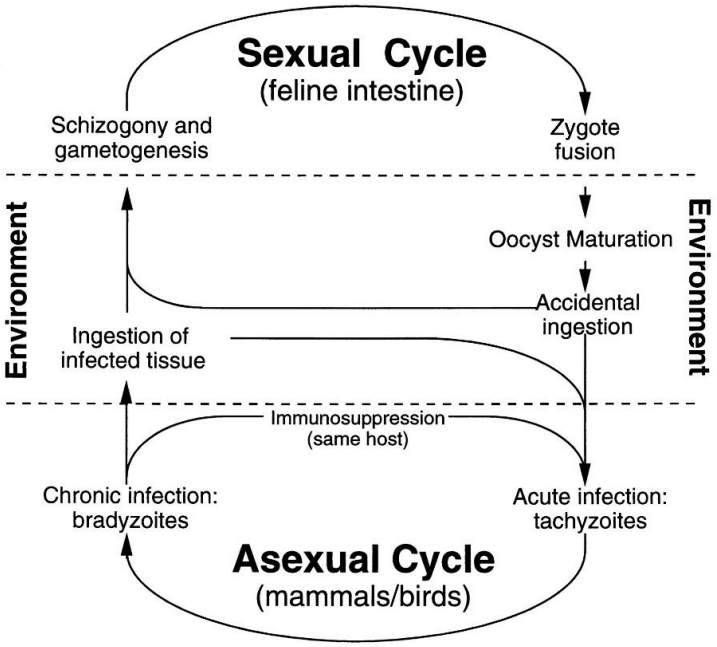
2-Prevention of avian toxoplasmosis requires **management practices** that **eliminate** the **source of infective tachyzoites** and **oocysts** by **preventing** exposure to **rodents**, flies, Cockroaches and **cats**.

3-**Oocysts disseminated** throughout the **premises** are **resistant** to common laboratory **detergents**, acids, and alkalis and are, therefore, **difficult to destroy**.

4-However, they may be **destroyed** by ammonia, **drying**, and a temperature of **55°C**.



Life cycle of *Toxoplasma gondii*



Referens:

1-Saif, Y. M. (2009). *Diseases of poultry*. Twelfth edition. Iowa. Blackwell.2009. 1067-1120.