

2-Mycoplasma synoviae infection

***Definition:** The infection most frequently occurs as a **subclinical upper respiratory infection, at other times** (under unknown condition), MS becomes **systemic** and results in infectious **synovitis, acute to chronic** infectious disease of chickens and turkeys, involving primarily the **synovial membranes of joints** and **tendon sheaths** producing **exudative synovitis, bursitis**.

***Infectious synovitis** was observed primarily in **growing birds 4-12 weeks** of age.

* **Infectious synovitis** usually appears in **turkeys** when they are **10-20 weeks**.

*Mycoplasma synoviae may cause **air sac** lesions when combined with **Newcastle disease (ND), infectious bronchitis (IB)**, or both.

***Transmission:-**

1-Vertical transmission.

2-Lateral by direct contact:-

Transmission occurs via the **respiratory tract**, and usually **100%** of the birds become infected, although none or only a few develop joint lesions.

***Incubation period: -**

1-The incubation period following contact exposure is generally **11-21 days**.

2-When the infection from **egg transmission**, the incubation period **6days** old chicks.

3-In birds experimentally infected by **foot pad 2-10 days**.

Clinical Signs:-*1-In chickens:-**

- 1-The **first observable** signs in a flock affected with **infections synovitis** are **pale comb, lameness and retarded growth**.
- 2-As the **disease progresses**, feathers become ruffled and the **comb shrinks**.
- 3-In some cases, the **comb is bluish red**.
- 4-**Swellings** usually occur **around joints**, and **breast blisters** are common.
- 5-**Hock joints** and **foot pads** are principally involved, but in some birds most **joints** are affected.
- 6-Birds become **listless, dehydrated and emaciated**, although birds are severely affected, **many continue to eat and drink** if placed near feed and water.
- 7-In other instances, the acute phase is absent or not noticed and only a few chronically infected birds are seen in a flock.
- 8-Slight drop in egg production.

2-In Turkeys:-

*Generally (Ms) causes the same **type of signs in turkeys as in chickens:-**

- 1-**Lameness** is the most prominent signs.
- 2-**Warm fluctuating swellings** of one or **more joints** of lame birds.
- 3-Occasionally, there is enlargement of the **sternal bursa**.
- 4-Respiratory signs are **not** usually observed in turkeys.
- 5-Egg production affected to the same degree as in chicken.

Gross lesion:-*1-In chickens:-**

1-In early stages of the infectious synovitis, there is **viscous creamy to gray exudate** involving **synovial membrane** of the **tendon sheaths, joints and keel bursa**.

2-As disease progress, exudate become **caseous exudate**, and **rarely** extending into muscle and air sacs.

3-**Hepatosplenomegaly**.

4-**Kidneys** are usually swollen, mottled and pale.

2-In Turkeys:-

1-Swelling of the joints may not be as prominent as in chickens, but **fibrinopurulent exudate** is frequently present when the joints are opened.

2-Lesions in respiratory tract are not common.

***Diagnosis:-**

1-Positive diagnosis may be by **isolation and identification** of *M. synoviae*.

2-Polymerase chain reaction (**PCR**) is a simple, rapid, and highly sensitive method of detection of (MS DNA) in tissues or culture medium.

3-Serology:-

A-Serum Plate agglutination (**SPA**) test, Antigen is available commercially for this test.

*Generally **0.02ml serum** is mixed with equal amount of antigen on a **glass plate**, which is gently rotated and observed for **agglutination**, approximately **2-4week** are required for **antibodies** to develop in infected birds.

***Nonspecific reactors** occur in some flocks when using the (SPA test), especially in flocks that have been **vaccinated** with **oil emulsion** vaccines against various agents.

B-ELISA (Enzyme-linked immunosorbent assay):-

Is commonly **used as a diagnostic and for routine testing of flocks**, and may replace serum plate agglutination as primary serologic test.

C-HI Test.

Differential Diagnosis:-

1-**Presumptive diagnosis** may be made on the basis of **pale comb, emaciation, leg weakness, breast blisters, enlarged foot pads or hock joints, splenomegaly, and enlarged liver or kidneys.**

2-**Bacteria** as causes of **synovitis** or **arthritis** must be eliminated by bacteriologic procedures:-

1-Staphylococcus aureus.

2- Escherichia coli.

3-Pasteurella.

4-Salmonellae. May also be present as primary causes of **synovitis**.

***M. gallisepticum** may also be a cause of **breast blisters** and **joint lesions**.

3-In case with respiratory disease should be eliminated.

Treatment and Control:-

1-M synoviae is **egg transmitted**, and the only effective method of control is to **select chickens or turkeys from MS-free flocks.**

2-**Effective biosecurity** measures should be used to prevent introduction of the infection.

3- M synoviae is susceptible in vitro to several antibiotics, including chlortetracycline, **enrofloxacin**, **Oxytetracycline**, Spiromycin, tetracycline, **tylosin**.

4-Experimental studies indicates that **chlortetracycline (50-100g/ton of feed)**, given continuously will provide **satisfactory control** of infectious synovitis in chickens, **higher concentrations** (approximately **200g/ton**) are required to control synovitis after infection has occurred.

*In turkeys, prophylactic levels of 200g/ton are required.

5-Treatment of **eggs with antibiotics** such as **tylosin** by **egg dipping or egg inoculation with tylosin** and **gentamycin** or **heat treatment** of hatching eggs has been used in breeding flocks to prevent egg transmission of (Ms).