

7-Chicken Anemia Virus (CAV)

***Definition:** It is viral disease characterized by **aplastic anemia**, lymphoid depletion, **hemorrhagic subcutaneous**, **immunosuppression**, with high mortality.

***Etiology:**

*CAV Caused by **Circoviridae** containing single strand, **circular DNA**.

*First isolation in 1979 in Japan.

*CAV resistant virus.

***Synonyms:**

Blue wing disease, Anemia dermatitis, Hemorrhagic syndrome.

Chicken infectious Anemia, Chicken anemia agent, Chicken infectious Anemia virus.

***Transmission:**

1-Vertical.

2-Horizontal by direct or indirect through **respiration or digestion route**.

***Clinical Signs:**

1-**Hemorrhage** occurs under **skin** and throughout **skeletal muscles** (especially **wing**).

2-There is **gangrenous dermatitis**.

3-Affected birds are depressed and can become pale.

4-Dual infection of CAV and immunosuppression such as MD, IBD or secondary bacterial or viral infections causing more **severe clinical signs, greater mortality and more resistant anemia**.

5-Around 2 weeks of age, the young chicks show variable mortality (**10-60 %**), but the more incidence **16%**.

6-**Subclinical infection** of progeny from immune breeder flocks is common and occurs soon after maternally Abs has disappeared about **3 weeks** of age.

6-This disease is **immunosuppression** disease due to lymphocyte depletion of bursa and **lymphocytic depletion** (T cell) of the thymus in commercial chickens.

***Gross lesion:**

- 1-**Thymic atrophy**, sometimes resulting in **complete absence of thymic lobes**, dark reddish color.
- 2-**Bone marrow atrophy** (become fatty and yellowish or **pink**) is most **characteristic lesion** and best evaluated in the Femur.
- 3-Bursal atrophy is **less commonly** and size maybe reduced and in many cases, the outer bursal wall appears translucent.
- 4-**Enlarged liver** (mottled liver caused by secondary infections), hemorrhages in proventricular mucosa.
- 5-Subcutaneous and muscular **hemorrhages associated with severe anemia.**

***Diagnosis:**

- 1-Clinical signs and pathology.
- 2-laboratory diagnosis, depend on immunofluorescent or immunocytochemical detective of (CAV Ags) in **thymus or bone marrow.**
- 3-ELISA and PCR (Nested PCR).

***Differential Diagnosis:-**

- 1-MDV can cause **severe atrophy of thymus and bursa of fabricius.**
 - 2-IBDV induces atrophy of lymphoid tissues with typical histological lesions, but normally **does not affect the thymus**, and MDV and IBDV normally do **not** cause anemia.
 - 3-Adeno virus (**Inclusion body hepatitis**), **aplastic anemia** that occur between **5-10 weeks.**
 - 4-**Intoxication** with high dose of **Sulfonamide or Mycotoxin (such as aflatoxin)**, can result in **aplastic anemia** and **hemorrhagic syndrome**, aflatoxin also may impair the immune system.
- *In the field, however, chickens are **rarely** exposed to doses of aflatoxin or sulfonamides that are sufficient to cause acute disease.

*** Control and Treatment:-**

- 1-Live vaccine in drinking water, or killed vaccine by injection.
- 2-Current vaccine strategies are based on the prevention **vertical** and horizontal transmission of virus to **very young chicks**, by immunization of breeder flocks and have been successful in reducing the incidence of anemia in young chicks.

3-Vaccination should be performed at (9-15 weeks) of age, **but never later than 3-4 weeks** before the first collection of hatching eggs to avoid the **hazard of vaccine virus** spread through the egg.

4-Treatment with **broad spectrum antibiotic** to control bacterial infections.