

**Turkey Corona Virus  
Enteritis  
Blue Comb Disease  
Transmissible enteritis  
Mud Fever**

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# Bacterial infections of turkeys



- Salmonellosis (typhoid and paratyphoid).
- Mycoplasmosis [*M.gallisepticum* (infectious sinusitis) and *M.meleagridis*].
- Fowl cholera.
- *Chalmydia psittaci*.
- *Bordetella avium*.
- *Ornithobacterium rhinotracheal* (ORT).
- Colibacillosis.
- Spirochetosis.
- Clostridial infections.
- Staphylococcosis.
- Streptococcosis.

# Viral infections of turkeys



- Newcastle disease.
- Avian influenza.
- Fowl pox.
- Corona viral enteritis.
- Pneumovirus infection [turkey rhinotracheitis (TRT)].
- Adenovirus infections.
- Avian tumors.

# Fungal infections of turkeys



- Aspergillosis.
- Candidiasis.
- Favus.
- All types of mycotoxicosis.

# Parasitic infestations of turkeys



- Coccidiosis.
- Histomoniasis.
- hexamitiasis.
- Trichomoniasis.
- All types of external parasites.
- All types of internal worms (nematods and cestodes).

# Definition



**Turkey corona virus (TCV) is the cause of an acute highly contagious enteric disease of all ages turkeys, characterized by depression, anorexia, diarrhea and decreased weight gain.**



# Economic Importance

- 1. Increased mortalities.**
- 2. Poor feed conversion.**
- 3. Weight losses.**
- 4. Growth depression.**
- 5. Immun-disfunction.**

# Etiology



- **Corona virus.**
- **Single stranded and enveloped RNA virus.**
- **The virus is stable at pH 3 at 22C for 30 min. and at 50C for 1 hr.**
- **The virus could be inactivated using chloroform at 4C for 10 min.**
- **Saponified aerosol and formaldehyde are effective disinfectants for virus elimination from buildings.**
- **Haemagglutinating virus for rabbit and guinea pig RBCs.**



# Pathogenesis



- 1) TCV virus replicates in the enterocytes lining the intestinal villi and in the epithelium of the bursa of fabricus.**
- 2) The site of TCV intestinal replication suggested that the virus may cause mal-absorption, mal-digestion and diarrhea may be de to the followings:**
  - A. Destruction of the intestinal villi.**
  - B. Alteration of the physiology of enterocytes.**
  - C. Alteration of the normal intestinal flora.**

**3) The intestinal flora of TCV infected turkeys are characterized by increased the number of putrefactive and lactose non-fermenting bacteria and consequently increase in lactobacilli.**



# Epidemiology



## **1) Natural and Experimental hosts:**

- ✓ **Turkeys are the only natural host for TCV.**
- ✓ **Pheasants, quails, chickens and sea gulls are refractory to infection.**
- ✓ **Experimental infection of turkeys using the filtrate of the intestinal or bursal homogenate of infected turkeys is successful.**

## 2) Mode of infection and transmission:



- ❖ TCV is shed in the droppings of the infected birds and spread horizontally through ingestion of contaminated feed and water by these droppings.
- ❖ TCV spreads rapidly through a flock and from flock to flock on the same or neighboring farms (**transmissible enteritis**).



- ❖ **Mechanical transmission (people, equipments, vehicles, insects, wild birds, rodents and dogs) can occur.**
- ❖ **There is no evidence that TCV is egg transmitted, however poult s could infected in the hatcheries via contaminated persons and fomites (egg boxes) of the infected flock.**
- ❖ **The virus sheds in the droppings of the recovered birds for several months.**



### **3) Incubation period:**

- **Typically 2-3 days.**
- **May vary from 1-5 days.**

# Clinical signs



## **A. In turkey poults:**

- Sudden signs with high morbidity.
- Depression and anorexia.
- Decrease water consumption.
- Watery and frothy diarrhea.
- dehydration.
- Hypothermia (huddling around heat sources).
- Weight loss.



## **B. In growing turkeys:**

- Sudden signs with high morbidity.**
- Depression and anorexia.**
- Loss of weight.**
- Sub-normal temperature.**
- Darkening of the skin over the head with wrinkling of it over the crop.**
- Dropping of the wings.**
- Arching of the back with retraction of the head.**
- The droppings may be green to brown and contain mucus, latterly, the droppings contain ureates.**





## **C. In breeder hens:**

- The signs are similar to growing turkeys.**
- Rapid drop in egg production.**
- Lack of normal eggs pigmentation (white chalky eggs).**



## **Morbidity and mortality rates**

- **The morbidity rate reached 100%.**
- **The mortality rate is variable (5-50%), as it depends on the bird's age, concurrent infection, management practices and weather conditions.**

## **The disease course:**

**10 days to 2 weeks.**

# Gross lesions



- ✱ **The lesions are seen primarily in the intestinal tract.**
- ✱ **The duodenum, jejunum and caecum are pale, flaccid and filled with watery , sometimes mucus casts contents with gases (severe enteritis).**
- ✱ **Petechial haemorrhages were seen on the intestinal mucosa.**
- ✱ **Emaciated and dehydrated carcasses (dark and emaciated breast muscles).**



- ✦ **Chalky appearance of the pancreas with white foci.**
- ✦ **The kidneys and ureter are filled with ureates.**
- ✦ **Atrophy of the spleen and the bursa of fabricus (immune-suppression).**

# Diagnosis



- **Signs and gross lesions are suggestive.**
- **Isolation:**

**The sample are taken as suspension from the intestinal contents, droppings or tissues (intestine or bursa of fabricus).**

**Inoculation in the amniotic sac of the embryonated turkeys (>15 days) or chickens (>16 days) eggs.**

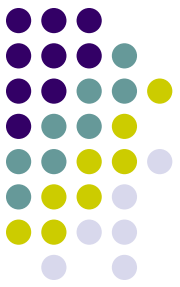
**After incubation for 2-5 days, the virus could be detected in the intestine of the embryo using immuno-histochemical staining (IF or IP) with specific antisera.**

**Identification of corona virus using electron microscopy.**

**RT-PCR is highly specific for the virus detection.**

**Detection of antibodies using FAT and ELIZA tests.**

**Using of cell culture for propagation of the virus after adaptation by serial passage may be used using human rectal adenocarcinoma (HRC) cells.**



# Differential diagnosis



**TCV must be differentiated from other diseases causing diarrhea in turkeys like:**

- ✓ **Protozoal infection as histomoniasis (black head disease).**
- ✓ **Bacterial diseases as pasteurellosis.**
- ✓ **Water deprivation.**

# Prevention and control



- 1. Sound biosecurity measures must be instituted to prevent of TCV via potentially contaminated personnel, fomites, animals, wild birds, insect vectors and infected turkeys.**
- 2. Elimination of TCV from infected premises by depopulation (3-4 weeks) followed by thorough cleaning and disinfection.**




**3. Raising of the brooder house temperature, and avoiding over crowdedness may reduce mortalities.**



**4. Treatment:**

- ✓ **there is no specific treatment but it may be used to reduce the mortalities associated with secondary bacterial infections like (E.coli). Pencillins, tetracyclines and bacitracin may be used.**
- ✓ **Medicated water was given for 4-5 days, stop for one day then repeat treatment for 4-5 days.**
- ✓ **Calf milk replacer may be used (25 lb/100 gal. drinking water) fresh each day.**

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- ✓ **Potassium chloride (KCl) as 450 g/ lb/100 gal. drinking water was added to the milk suspension.**
  - ✓ **Copper sulphate in the drinking water or mycostatin in feed are used to control secondary intestinal mycosis that follows high level of antibiotic treatment.**

## **5. Vaccination:**

- **No vaccine is available.**
- **Recovered turkeys from infection are immune to challenge but they are carriers for life.**



*Thank you*