

BORDETELLOSIS (TURKEY CORYZA)

Alcaligenes rihnotrachitis (ART), Adenovirus-associated RD

Bordetella avium rihnotrachitis (BART)

Mohamed M.Zaki

Professor of Poultry Diseases

Fac.Vet.Med., Cairo University, Giza 12211, Egypt

Definition:

Bordetellosis is a highly contagious upper respiratory tract disease caused by *Bordetella avium*, characterized by abrupt onset of sneezing accompanied by oculonasal clear discharge, mouth breathing, submandibular edema, tracheal collapse, altered voice and stunted growth.

Etiology:

Bordetellosis of turkeys is caused by *Bordetella avium*. It could be uncomplicated or complicated infection with other bacteria (*E.coli*) or viruses.

It is Gram negative bacilli, non-fermentive, motile, aerobic. It grows on MacConkey, trypticase soy blood agar and brain heart infusion. The best growth on trypticase soy and brain heart infusion when aerated by agitation. Filaments could be seen in liquid medium. Incubated at 35°C but killed at 45°C. The colonies at 24hrs incubation are small, translucent, pearl-like with entire edges and glistening surface. At 24hrs it is 0.2-1.0 mm but at 48hrs it is 1-2 mm. On MacConky at 48hrs the colonies have brownish center. It is catalase and oxidase positive. Low temperature and humidity with neutral pH prolonged the survival time of *B.avium* in environment.

Natural and Experimental Hosts:

The natural host is turkey. Some reports indicated that bordetellosis could affect chickens and other avian species.

Transmission:

Bordetellosis is a highly contagious disease, transmitted by direct contact to diseased poult or exposure to infected litter or contaminated water. Infection is not transmitted

between adjacent cages (no aerosol infection). Litter could be remain infective for 1-6 months.

Incubation period:

Natural infection is 7-10 days, while experimental is 4-6 days.

Clinical signs:

1. More affected age 2-6 wk-old turkeys.
2. Abrupt onset of sneezing (snick) over a week.
3. Older birds >6 wk develop cough.
4. Nasal discharge.
5. During the 1st two weeks of the disease, nares and feather of head and wings covered by tenacious brownish exudate.
6. Some birds have submandibular edema.
7. Mouth breathing, dyspnea and altered voice in the 2nd wk of the disease due to partial occlusion of nasal cavity and trachea with mucoid exudate.
8. Poor weight gain, stunted growth and reduced performance.
9. Softening of trachea could be palpated from the skin of the neck.
10. Morbidity in turkey aged 2-6 wk is 80-100%, while it is 20% in breeders.
11. Mortality is <10% in 2-6 wk turkeys, while it is almost 0% in breeders.
12. The disease is complicated with E-coli, TRT virus, chlamydia psittaci, Kelbsiela pneumoniae and Pseudomonas.

Necropsy:

1. Serous to tenacious mucoid nasal and tracheal exudate.
2. Tracheal lesions in form of:
 - a. Softening and distortion of tracheal rings.
 - b. Dorso-ventral compression rings.
 - c. Fibrinomuroid luminal exudate.
3. Accumulation of mucoid exudate in trachea leads to suffocation of birds

Diagnosis:

1. Clinical signs (abrupt onset of sneezing).

2. Necropsy lesions (tracheal lesions).
3. Isolation and Identification:
 - a. Bordetella avium is isolated on MacConky agar.
 - b. Identification by agglutination test and AGPT.
 - c. Serology: Microagglutination test using stained antigen and ELISA.

Differential diagnosis:

Bordetellosis should be differentiated from mycoplasmosis, chlamydiosis and TRT.

Prevention and Control:

1. Treatment:
 - a. Breeders: tetracycline HCl + Penicillin-G potassium.
 - b. young turkeys: aerosol of OTC will reduce mortality.
 - c. Niacin at ratio of 70 mg/L DW reduces loss of cilia by 40%.
2. Apply sound management and hygienic measures (litter and water sanitation, remove stress factors, adjust temperature, humidity and ventilation)
3. Immunization:

Live temperature-sensitive (ts) mutants of B.avium (colonize nasal mucosa) induce moderate level of antibodies. 2- and 14-days coarse spray.

Whole cell bacterin for breeders (maternal antibodies).