

# info

## Ornithobacterium Rhinotracheale (ORT)

### Background

Ornithobacterium rhinotracheale (ORT) is a gram negative bacteria which causes respiratory disease, primarily a pneumonia in both commercial and breeder turkeys. It has been reported in many countries including Germany (1981), Netherlands and UK (1986), Israel (1986), and the USA (1993).

ORT appears to be a secondary invader or opportunist similar to E.coli. Clinical disease due to ORT is usually associated with one of the following stressors:

- Live or field viruses such as Turkey Rhinotracheitis, Newcastle Disease, and Avian Influenza.
- Mycoplasmas.
- Bacteria such as Cholera (Pasteurella multocida), Coryza (Bordetella avium).
- Stress in breeders such as lighting, handling, insemination/semen collection, egg/semen production .

### Clinical Signs: Commercial Turkeys

Outbreaks have been observed mostly in male turkeys over 8 weeks of age. The mortality is variable and on average ranges between 1 to 4.5% during the acute phase (first 8 days). Severe cases have resulted in 8 to 10 % mortality. Initial signs are coughing, sometimes accompanied by nasal discharge, followed in some cases by severe respiratory distress due to lung consolidation. The course of the respiratory problem depends on many different circumstances: history of the flock, immune status, age, presence of different agents (viruses, bacteria, mycoplasmas), density and other environmental conditions. Water and feed intake

are reduced and the flock appears depressed. The clinical picture and mortality pattern resembles fowl cholera.

### Clinical Signs: Turkey Breeders

It is felt that there is a higher disease risk shortly after the onset of egg production which is likely stress related. Onset of ORT infection is characterized by a sudden increase in mortality (1 - 2%), a temporary drop in egg production and a high mortality rate for 3 to 5 days. The flock in general appears normal with few clinical signs. There is no increase in cull eggs and no affect on hatchability or subsequent poult quality. Toms are more affected with coughing (sometimes including blood), respiratory distress and depression.

### Post Mortem

Birds are in good body condition. The most striking lesion is the fibrinous pneumonia which is usually unilateral. Pericarditis, airsacculitis and peritonitis have also been reported. The spleen and liver are mildly increased in size. Other diseases to rule-out should include fowl cholera (P. multocida or anatipesifer) or a viral challenge plus secondary E.coli.

### Diagnosis

**Culture:** It is a gram negative pleomorphic rod which grows very slowly on blood agar into small 2 to 3 mm colonies. Growth is best with added CO<sub>2</sub>. Due to this slow growth (48 hours) and very small colony size, it is likely that in the past some cases might have been overlooked and instead E.coli recorded as the "cause" of the mortality. Although in some cases ORT has been isolated in

#### Hybrid Turkeys

Head Office  
650 Riverbend Drive  
Suite C  
Kitchener, ON N2K 3S2  
Canada  
Tel. 519-578-2740  
Fax 519-578-1870  
E-Mail:  
info@hybridturkeys.com

#### Hybrid Turkeys

European Office  
P.O. Box 30  
5830 AA Boxmeer  
The Netherlands  
Telephone +31 485 589922  
Fax +31 485 575205  
E-Mail: euribrid@e-mail.com



pure culture, most often E.coli is also present. Determining the sensitivity and resistance profiles of ORT may be useful to aid in the recovery of ORT by the inclusion of antibiotics in the media or on tracheal swabs to which ORT is resistant but E.coli is sensitive.

Preferred sites to culture from include: trachea, lung and airsac. ORT is rarely isolated from liver, spleen, brain or bone marrow.

**Serology:** There are 7 serotypes designated A to G. In the Netherlands, all types except C have been reported.

In the USA (to date), only A (most frequent), B (only 1 case), and C (only in California) have been reported.

Currently, a rapid plate serological test is available through the University of Minnesota which will detect Types A, C and E. A commercially available ELISA test is currently being developed.

### **Spread**

The epidemiology of ORT is not known. Attempts to experimentally reproduce the disease have been difficult. Spread within the flock is quick but from barn to barn is relatively slow. Occurrence of ORT on farms where good biosecurity is practiced may indicate that wind borne transmission plays a role. ORT has been isolated from broiler chickens, some waterfowl and crows. Presently there is insufficient evidence to support egg borne spread.

### **Treatment**

In all cases a sensitivity test should be run to determine the most effective antibiotic. Antibiotics which have been reported to be effective in North America (water and/or feed) include: oxytetracycline, chortetracycline, penicillin, amoxicillin, sulfadimethoxine and enrofloxacin. In Europe resistance to enrofloxacin has been

reported. When administering antibiotics, it must be remembered that toms often show marked depression and decreased feed and water intake. Breeder toms respond well to intramuscular injection with spectinomycin or penicillin.

### **Prevention**

Primary stressors must be identified and eliminated or minimized. This however is difficult to do in breeder flocks coming into production. At this time normal physiological processes and management practices often collide.

**Biosecurity:** It is difficult to recommend where specific improvements need to be made because the way in which ORT is spread is unknown. If one flock on a farm is affected it should be strictly quarantined.

- Minimize traffic in and out of the barn.
- Change into coveralls, boots and a hair bonnet which are used in that barn only. If possible shower before entering other unaffected barns.
- Sanitize hands upon leaving the barn.
- Dispose of dead birds immediately and properly. Do not allow wild birds or other animals access to dead birds. Do not leave dead birds exposed outside the barn.

If a breeder flock is affected, extreme care should be taken to avoid infecting breeder toms which are more susceptible than the hens.

**Vaccination:** As the result of routine monitoring, it has been found that non-clinical commercial flocks which were positive at a younger age never developed clinical disease, all the way to market at 22 weeks of age. Autogenous bacterins have been used with mixed results. This may be due to lack of cross protection between the various serotypes of ORT. A commercially available ORT vaccine is

being developed which will protect against all serotypes.

### **Conclusions**

Further research concerning ORT is needed especially in the area of epidemiology. Serological monitoring will help to determine which flocks will be susceptible. Vaccination will likely become an important preventative strategy to ensure that all flocks on the farm are of equal status and that breeders come into production protected. Emphasis must be placed on minimizing other disease challenges and improving biosecurity.

### **Glossary**

**Pericarditis:** Inflammation /infection of the thin sac surrounding the heart.

**Airsacculitis:** Infection (bacterial, viral, mycoplasmal) of the airsacs, usually those in the abdomen.

**Peritonitis:** Inflammation /infection of the lining of the abdominal cavity.

© Hybrid Turkeys

Unless otherwise specified, the information provided here is the property of Hybrid Turkeys. Before reproducing or publishing this material in any manner, please obtain approval by calling Hybrid Turkeys' head office in Kitchener, Ontario, Canada at +1-519-578-2740.

