Case A1 – Respiratory Signs and Increased Mortality in Commercial Broilers

History:

The following case occurred a few years ago on an old and quite poorly equipped broiler site in the Donkerhoek area East of Pretoria in September. The site comprised 8 houses, each housing 10 000 broilers. There was an unusual heating system at the farm which made use of circulating hot-water through pipes which were suspended slightly above the chicks. This system was not really effective in cold weather and made moving around the house quite difficult.

Chicks were obtained from a small private hatchery and the breeders had been quite recently "spiked" by adding male birds obtained from a breeder farm in KwaZulu-Natal. The broilers received a standard vaccination programme against Newcastle disease, Infectious Bursal disease and Infectious Bronchitis.

From about 10 days of age, chicks developed respiratory disease and mortality increased, reaching a cumulative mortality of about 10% by the end of the cycle.

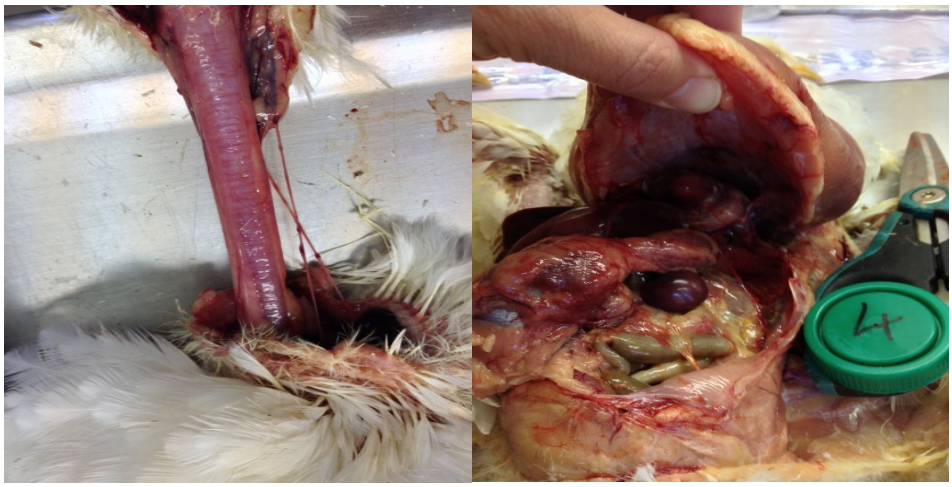
Clinical and Post Mortem observations:

At 16 days of age the farm was visited and the following was observed.

Live chickens were depressed with respiratory rales.

On post mortem the following was seen:

1. Mild tracheitis
2. Airsacculitis and septicaemia in some cases.
3. Nephrosis



Blood samples were collected for serological testing. Swabs were taken from the airsacs for bacterial culture. Tracheal samples were collected for virus isolation.

Birds were put onto a broad-spectrum antibiotic for 5 days, mortality was reduced.

Laboratory findings:

Serum was positive on the ELISA test for Newcastle disease, Gumboro disease and Avian Influenza.

E.coli was isolated from the airsacs.

Virus isolation was also positive for Orthomyxovirus.

Questions:

Private vet questions:

1. Apart from a viral or bacterial aetiology, what other important DD's need to be considered in a case like this?

   Management issues such as poor ventilation and brooding (heating), high ammonia and dust levels should be taken into account. It is also important to determine when the birds died.

2. Based on the available information what is your diagnosis? Which type?

   Virology indicates Avian Influenza (family *Orthomyxovirus*), and the clinical picture further suggests that it is probably LPAI (low pathogenicity Avian Influenza). Further, do not be misled by the positive ELISA for ND and IBD – it is probably vaccine reactions. However, since there is no AI vaccinations the positive ELISA for AI becomes highly significant.

3. What further identification of the pathogen needs to be done as soon as possible? What laboratory tests can be used to do this?

   It should be confirmed that it is LPAI. It was traditionally done by HI, but PCR and sequencing are now also available as diagnostic methods. It may also become important to know the H and N serotypes or subtypes.

4. What are the likely sources of this disease, in this case specifically? What would be the appropriate control measures?

   In this instance the male breeders became infected with LPAI in KZN, and they infected the hens. Although the disease is not really vertically transmitted, it was observed that it moved through the hatchery (probably on dirty eggs). One should also consider other possible sources of infection such as wild birds, humans and fomites.

State vet questions:

1. What would the quarantine notice for a place like this look like?

   - On the farm itself, food should be withheld for 6-8 hours, which decreases shedding of virus particles via faeces.
   - Wet the birds to reduce virus transmission through feathers while transporting the birds on the truck.
   - It is very important to plan an appropriate transport route to the abattoir.
   - The catching team must be free of contact with other poultry for 12 hours, and change into different sets of protective clothing between houses.
   - Once the birds arrive at the abattoir, they should be slaughtered last. The areas between slaughtering must also be disinfected.
   - Mala should be condemned, and crates must be cleaned before they are sent back to the farm.

2. What samples would you take for the traceback investigations and where would you take the samples?
   All entry and exit documentation for the farm.