Part 5 - Respiratory Diseases

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Remember that the respiratory system of a bird includes lungs, air sacs and hollow bones. Therefore, keep dust and ammonia levels low which will help the health and welfare of poultry since ammonia paralyses the small hairs (cilia) which act like an escalator to move normal mucus up the trachea before being swallowed. If these are impaired, viruses, bacteria and fungi have a greater chance of colonising the bird in its air sacs, lungs and bones and causing disease which is therefore very difficult to eradicate.

Avian Influenza: (this highly contagious infectious disease is notifiable.)

Cause and signs

Free-range birds are considered to have a high risk of infection from wild birds carrying the virus. There are several viruses that cause concern in poultry e.g. H7N7 and the potentially zoonotic (transmissable to humans) H5N1. Influenza viruses may be low pathogenic (LP) or high pathogenic (HP). It is the latter variant that causes sudden multiple deaths in bird flocks.

Poultry owners should have knowledge of what signs to look out for: high, rapid and unexplained mortality and a severe drop in egg production should immediately alert the owner to a problem.

Symptoms

- Large numbers of depressed, sick and dying birds
- Panting with open mouth
- Discharge from eyes and nostrils
- *Dark congested comb and wattles* (the main difference from Newcastle Disease signs)
- Swelling of the head
- High fever

Differential (other possible/similar) diagnoses

- Newcastle Disease: nervous signs such as twisted neck, trembling or difficulty in walking
- Infectious Bronchitis: respiratory noise, discharge from eyes and nostrils, egg production drops but not significant acute mortality
- Mycoplasma: severe sinusitis, head swelling, sweet sickly smell, congested nostrils.

Bacterial respiratory pathogens:

Ornithobacter rhinotrachale (ORT)

Haemophilus paragallinarum (fowl coryza)

E. coli as secondary infection

Fig 1: Avian Influenza showing congested comb and wattles

Transmission

AI is a serious viral disease which is rapidly fatal. Like other influenzas, there are various strains, some more dangerous (pathogenic) than others. The most likely route of introduction to an area is by free-flying waterfowl, but domestic waterfowl can carry it with few clinical signs and then infect chickens.

The virus is mainly transmitted in droppings and can survive in damp and warm conditions for 40-60 days: a tiny amount can infect huge numbers of birds. It is easily transported by contaminated muck on boots, clothing, dirty crates or vehicles (formites). It is, however, susceptible to approved virucidal disinfectants. A list of approved disinfectants is on the DEFRA website.

Treatment

There is no AI vaccine available at present.

Control of an outbreak

Movement restrictions, biosecurity including wild bird exclusion, slaughter and possible de-population of surrounding area. If pure breed that are not infected can be housed, they may escape slaughter (see **If an outbreak occurs,** below).

Paramyxovirus: Newcastle Disease (ND) or Fowl Pest

This was first isolated in 1926. **It is also a notifiable disease.** All birds are susceptible especially chickens and turkeys. Pigeon paramyxovirus reached the UK in 1983 and has caused outbreaks in outdoor flocks through contamination of feed. ND is also a serious viral disease which is rapidly fatal. ND is zoonotic with flu-like

symptoms and conjunctivitis.

Symptoms

Signs are very variable and may affect the respiratory and nervous systems and may cause a drop in egg production and soft-shelled eggs, greenish loose faeces, torticollis (twisted neck) and sudden death. A recovered chicken may have asymmetrical pupil size for life, something judges of pure breeds check for since it then disqualifies a bird from competition.

Cause

The paramyovirus survives in the dead host for several weeks at cool temperatures or several years if frozen, and in faeces for over a month. Birds imported into the UK from outside the EU (if allowed under current regulations) have to be quarantined for 35 days and 8 week old, unvaccinated chickens are used as sentinels. The UK is mostly clear of the disease but outbreaks do occur from time to time (the most recent one via feral pigeons).

Fig 2: Newcastle Disease showing torticollis

Transmission

The main distributors can be pigeons which carry a close variant of the virus, waterfowl can carry ND with few clinical signs. The virus is transmitted by aerosol and in droppings. It can survive in the dead host or in excretions for several weeks at cool temperatures, several years if frozen. High (over 37°C) temperatures reduce this to about 30 days. It is easily transported by contaminated muck on boots, clothing, dirty crates or vehicles (known as fomites) and by wild birds. It is susceptible to approved virucidal disinfectants. A list of approved disinfectants is on the DEFRA website.

Treatment

There is an efficient vaccine (no vaccine is 100% effective, vaccines reduce signs of the disease but may mask the presence of disease). Only in the face of an outbreak is vaccination recommended, but racing pigeons are compulsorily vaccinated.

Control of an oubtreak

Vaccination, movement restrictions, biosecurity, some slaughter.

AVIAN INFLUENZA AND NEWCASTLE DISEASE: WHAT DO WE NEED TO DO?

In 2003 Holland was ravaged by Avian Influenza (AI). Many shows were cancelled and many pure breed poultry slaughtered. Understandably, no-one wishes to go through that again or indeed for it to happen in this country with our strong tradition of poultry keeping, breeding and exhibiting. AI is becoming endemic in Europe and there have been several outbreaks in commercial units in the UK since 2003.

DEFRA knows the unique genetic position of pure breeds via The Poultry Club and has advised the Fancy what would be needed if an outbreak of AI or another serious disease such as ND occurs in the UK.

Some breeders already protect their birds against ND by vaccination: there is no

Similar protection against AI. However, some simple biosecurity measures will go a long way towards prevention of a devastating outbreak of either disease in your flock and in the poultry industry and Fancy generally.

Biosecurity in a free-range flock

- Keep feed under cover to minimise wild bird attraction.
- Keep water fresh and free of droppings.
- Keep waterfowl and chickens separate.
- Control vermin.
- Quarantine new stock for 2-3 weeks.
- Quarantine birds after taking to an exhibition for 14-21 days.
- Change clothes and wash boots before and after visiting other breeders.
- Change clothes and wash boots before and after attending a sale.
- Keep fresh disinfectant at the entrance to poultry areas for dipping footwear.
- Disinfect crates before and after use, especially if lent to others. However, it is preferable not to be sharing equipment.
- Disinfect vehicles which have been on poultry premises but avoid taking vehicles onto other premises.
- Monitor any disease signs and report any suspicion of disease.
- Comply with any import/export regulations/guidelines.

These are common-sense measures which can easily be incorporated into daily routine and are designed to protect your birds.

If an outbreak occurs

Laws are already in place for carrying out disease control measures as speed is of the essence in order to prevent disease spreading. If either AI or ND is suspected, DEFRA must be informed immediately and State Veterinary Inspectors will then visit the suspected premises. Samples will be taken, movement restrictions will be imposed on the infected premises. If AI or ND is confirmed, all movements would be stopped (possibly nationally or regionally) until the disease situation can be assessed. Restrictions will not be eased until DEFRA is confident it will not increase the risk of spread of disease. All birds (and eggs) on the infected premises will be slaughtered (as will birds that risk assessments determine are certain to catch the disease - Dangerous Contacts). Compensation would then be paid on birds that were not diseased at the market value of the birds at the time of slaughter. The source of the disease would be investigated.

Established pure breed flocks may be exempt from this if there has been no contact with the affected flock: tracings of movements will confirm this. It is likely that they will have to be housed. A surveillance zone of minimum 10 kilometre radius around infected premises would be maintained for at least 30 days. If a laying flock is infected, any eggs could only be sold to poultry-free premises and only for consumption or processing.

If ND is suspected, poultry in the surrounding zones may have to be vaccinated, other restrictions applying.

Unlike the Fancy, DEFRA works on a flock basis, thus, in order to consider any sort of pure breed exemption in the unlikely event that a firebreak cull becomes necessary to stop disease spreading they would need to know where the flocks are in advance, the GB Poultry Register is for flocks over 50 birds, but The Poultry Club has an efficient Ringing Scheme which would help with this.

Other respiratory conditions

Blocked nasal openings: this can obviously be a problem with chronic respiratory problems. Discharge accumulates and hardens at the nasal opening but it is possible to soak and remove this carefully from a conscious bird, remembering that some species have a sensitive operculum (nostril cover), which needs to remain in place.

***Aspergillus* fungus:** all classes of poultry are susceptible. It is a very difficult disease to treat successfully as there are few early symptoms and once it spreads throughout the air sacs, lungs, hollow bones and abdomen it is probably too late. Mouldy hay or straw or rotting or decaying vegetable matter, such as bark, should be avoided as a substrate, as it is the spores of the fungus that are inhaled, wood chips do not support the fungus. Most healthy unstressed birds will cope with a low level of infection, but birds under stress may die suddenly. It is also passed to the chick through the egg. This disease is zoonotic, causing Farmer's Lung in humans.

Treatment

Antifungal agents such as itraconazole are successful if the disease is caught early enough, or the affected bird can be nebulized with F10, a disinfectant which is non-toxic to the birds.

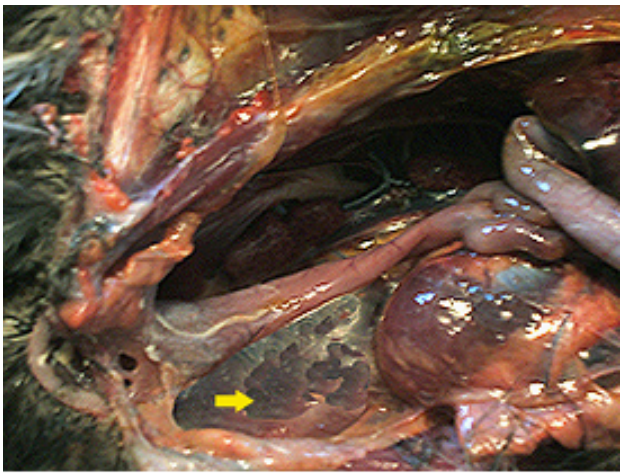

Fig 3: Aspergillusin the air sac (grey patches, yellow arrow)

Air sacculitis : this is a general term covering several air sac diseases in all poultry ranging from parasitic (air sac mites: mainly a problem in very small adult birds) to chlamydiosis to aspergillosis.

Air sac leakage: subcutaneous emphysema sometimes occurs, usually the cervical air sac leaks and air appears under the skin locally or all over, making the bird look like a balloon caricature. If this does not resolve in a few days, a nick can be made in the skin to let the air out. This small amount of skin can then be sutured open which aids the air sac to heal by slow metabolism.

Infectious Bronchitis (IB): this is a coronavirus causing respiratory disease and kidney damage in young poultry, plus oviduct infection with depressed egg production and poor shell quality (often wrinkled) in layers as the shell gland is affected. Birds laying the odd wrinkled egg may be carriers and should be culled. Poor shaped eggs should not be set for hatching. The signs of IB are similar to mycoplasma and the spread of infection is 1-3 days throughout a flock: mycoplasma tends to have lower morbidity (affected birds). Commercial flocks vaccinate against IB and ND with a combined vaccine and pet bird owners may opt to do the same if there is a problem in the area. However, vaccination has not proved to give particularly good control in outdoor birds. Because the presence of mycoplasma predisposes birds to IB, it is very important to control the incidence of mycoplasma in the flock (see Mycoplasma Bulletin).

Fig 4

Fig 5

Figs 4 and 5 Mis-shapen eggs and wrinkled shells caused by infectious bronchitis

Pasteurella multocida: a commensal (normal inhabitant) in many mammals but not generally in poultry or wild birds. Rats are a known infective source. The disease is known as fowl cholera and symptoms include respiratory distress, lameness, lethargy and swollen wattles. Antibiotics and sulphonamides are effective and there is also a vaccine.

Chlamydiosis : Chlamydia psittaci, known as psittacosis in parrots or ornithosis in other birds, this is a potentially dangerous zoonotic disease as it may cause pneumonia and abortion in humans. Bird keepers need to inform their doctors of their hobby so that in event of illness this disease may be part of the differential diagnosis. Infection in birds can cause ocular and nasal discharge and distressed breathing. It is confirmed by laboratory (ELISA) test. There is a misconception that it can only be caught from parrots, but turkeys, ducks, pigeons and sheep have also been implicated. It is a difficult organism to treat as it has as part of its life cycle a stage that hides inside cells, therefore long term antibacterials have to be used.

Infectious Laryngotracheitis (ILT): this is caused by a herpesvirus and mainly affects male, heavy breed chickens and turkeys. Symptoms are a nasal discharge, gasping and tracheal plugs of mucus which can cause death. Mycoplasma, IB, Vitamin A deficiency and ammonia will predispose to more severe disease plus there is a carrier state. There is a vaccine.

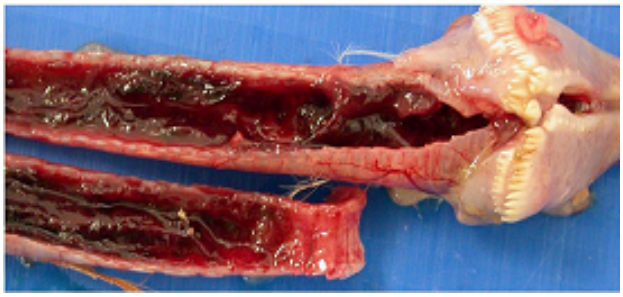

Fig 6: Bloody mucus in trachea: Infectious Laryngotracheitis (ILT)

Economic impact of any respiratory problem

A notifiable disease outbreak can cause loss of entire flocks whether through death or culling and any compensation is based on commercial values - pure breeds are only valued as if they were commercial layers or meat birds.

Lesser respiratory problems can at least cause loss of production plus poor welfare for the birds.

Crowing:

It is a fact of life that cockerels will crow! There is no method of physically silencing them, but putting them in a dark box of suitable dimensions overnight to reduce the sound and frequency will often placate unhappy neighbours. It is illegal to surgically de-voice cockerels or peacocks in the UK.

Those who wish to breed chickens must take in to account the fact that an average of 50% of the hatch will be males and decide what to do with them. There is little or no market for spare cockerels, but they can of course make a tasty meal.