Mycoplasmosis (M.gallisepticum)

In Game Birds

Introduction

Mycoplasmosis due to Mycoplasma gallisepticum (MG) is a common bacterial disease in game birds. The clinical signs are weeping eyes, swollen facial sinuses and respiratory noise.

These signs are not diagnostic. Cryptosporidiosis, bacterial conjunctivitis, foreign body conjunctivitis and bacterial and viral respiratory infections can cause similar signs. Pheasants and partridges can also carry Mycoplasma gallisepticum without showing signs of disease (sub-clinical infection).

Mycoplasmosis has become a major problem over the past 5 years and it appears not to respond as well to antibiotics as previously.

As a result, the game bird vets in the British Veterinary Poultry Association (BVPA) have set out to try and find answers to the following questions:

What is the extent of the problem?
Has the strain of MG affecting game birds changed?
Is the strain of MG present less sensitive to antibiotics?
Are other diseases present that are making the MG symptoms worse?
What actions can we take to reduce the impact of the infection?

It is known that there are other strains of Mycoplasma in game birds, many of which do not cause disease. At present it is Mycoplasma gallisepticum (MG) that is the cause of most of the clinical disease being seen in game birds.

Many species of bird have been shown to carry the disease including pheasants, partridges, grouse, crows, pigeons, finches and poultry.

Young and stressed birds are more likely to show the typical clinical signs although these may vary between species.

In pheasants and partridges

MG lives predominantly in the cells of the body. It does not survive long outside the bird (possibly up to a few days in ideal circumstances), 4hrs to 4 days is commonly quoted.

Disease spread

The disease can spread directly from bird to bird (horizonal spread) by close contact – through exhalation, coughing or sneezing and environmental contamination including from feeders and drinkers.
It also spreads from the hen to the chick via the egg (vertical spread).

Disease diagnosis

The disease is often diagnosed on clinical signs but as a number of other diseases show similar clinical signs this may not be a reliable method of diagnosis in many cases.
Laboratory testing is more reliable as a method of diagnosis. There are two tests that are commonly used:

i) Polymerase Chain Reaction (PCR) is the method used to detect small amounts of DNA or RNA and make enough copies of it to be detectable. Swabs are taken from the birds and either tested individually or as a batch. Once sufficient DNA or RNA has been obtained by the laboratory, a fluorescent marker which fluoresces in the presence of the selected DNA is added and this can then be detected.
ii) Culture. Swabs are taken from infected birds and cultured on special media. PCR testing is used to identify any mycoplasmas isolated. The advantage of this method is that there is live mycoplasma available for sensitivity testing, strain typing and the production of a vaccine if this is required.
We have found that we have much more success getting MG to grow if we send fresh whole heads for culture rather than swabs.

Sensitivity testing – results of our testing

Game bird MG appears to have developed a level of resistance to the common drugs used in the treatment of the disease. This is in contrast to MG isolated from poultry which still has good sensitivity.
In 2016 and 2017 the MG isolated from cases we submitted were tested against Aivlosin, Tylan and Denagard.

Our results suggest:

i) Tylan is now virtually useless against MG
ii) Aivlosin has limited use against MG
BUT: we have found Aivlosin to work well clinically in some birds – especially chicks. This may be that the samples sent for testing were from the more difficult cases that were not responding quickly and on which Aivlosin had already been used.
iii) Denagard – our results suggest Denagard was the most effective of the drugs tested but still game bird MG is not as sensitive as poultry MG.

Similar results were seen in all the game bird samples tested from practices throughout the country.

We need to extend the range of antibiotics being tested and we will include Doxycycline in testing this year on samples we submit. We will also try to get BVPA group to extend the range of drugs being tested.

Why has game bird MG developed a level of resistance to the common drugs used in the treatment of the disease?

We do not know the answer to this question, but possible causes include:

i) **Under dosing.** It can be difficult to accurately calculate the total weight of birds to be treated and to ensure that birds get a full dose every day as water and food intake can vary markedly due to varying weather conditions.
ii) **Overuse of antibiotics.** We have for many years used antibiotics to prevent Mycoplasmosis, possibly in flocks that had little or no infection and this may have contributed to the development of resistance to the drugs. However very similar results have been obtained from all game bird MG isolated over the last two years suggesting that the problem is not as the result of the actions of any particular veterinary practice.
iii) **The use of live vaccines.** Although the use of live vaccines (particularly MG6/85) is contra-indicated, it is known to have been used on many flocks in the country. This is likely to have escaped from the vaccinated birds into non-vaccinated stock and may have contributed to the development of resistant strains of MG in game birds.

Control of Mycoplasmosis

i) **Management.** The incidence of clinical disease caused by Mycoplasma gallisepticum can be decreased by good management and by reducing stress on infected birds.
As the disease is primarily found in the birds rather than the environment then protecting breeding and rearing stock from wild birds which may carry infection is important. Overwintering disease-free stock rather than catching up birds of unknown health status for breeding stock should also reduce clinical disease. Prevention of disease in released birds is more difficult. Decrease stocking density to reduce stress and also ensure that last year's birds are not around the release pens. Ensuring there are adequate numbers of feeders and drinkers (with the water acidified) should help reduce clinical disease.
ii) **Drugs.** As game bird MG appears to have developed a level of resistance to the common drugs used in the treatment of the disease the most effective drugs can only be determined after culture. However, from taking samples to getting results takes several weeks so the vet's choice of drug often depends on the source of the birds and previous history of the farm.
iii) **Vaccines**
    a) Live – never ever use MG6/85. The data sheet for MG6/85 has three pieces of advice / warnings that make its use in breeding pheasants and partridges inadvisable:
        i) Care should be taken to prevent spread of the vaccine strain to other birds …. such as game birds, geese and ducks. After three passages the vaccine strain may revert to a clinical strain.
        ii) It is not intended for use in future breeders This is because of the potential danger of vertical spread of the vaccine strain.
        iii) Vaccinate with a fine spraying device. This is difficult in game birds but eye drop vaccination is less effective and a proportion of birds will not be vaccinated.

    Similar problems are likely with the TS11 live vaccine which is licensed for poultry only.

b) Dead vaccines (commercial)
The commercial poultry vaccines do not prevent infection. They are designed for the vaccination of pullets to protect again egg losses in laying hens. For maximum effect the birds need to be given two injections at least four weeks apart. Poulvac MG, which may be obtained by vets on a Special Import Certificate, is claimed to produce just 67.5% protection against the strain of MG for which it is intended. Therefore about a third of birds remain unprotected. The vaccine will not give protection to birds already infected.

c) Dead Vaccines (autogenous)
Mycoplasma autogenous vaccines are vaccines made from Mycoplasma isolated on a farm and injected back into birds on the same farm. Unlike commercial vaccines they can be sold without any claims as to efficacy. If used in already infected flocks, they will have no effect on already infected birds and are unlikely to provide better protection against the target mycoplasma than commercial vaccines provide against their target organism.

Both commercial and autogenous dead vaccines tend to prevent clinical signs in infected birds without preventing the transmission of the mycoplasma to chicks via the egg.
We have seen chicks produced from flocks vaccinated with commercial and autogenous vaccines with clinical Mycoplasmosis.

Conclusions.
There is no one solution to the Mycoplasmosis problem that will be effective on every site. A mixture of management techniques, antibiotic usage and attempts to breed Mycoplasma free stock are required to help reduce the incidence of disease. In exceptional cases the use of vaccines may be appropriate.
Where there have been problems we advise clients to contact the practice well in advance of the forthcoming season so that a health plan can be devised that is appropriate to the individual circumstances of the site.

Sandhill Veterinary Services
Veterinary Care for Game Birds, Commercial Poultry and Pigeons