Avian metapneumovirus

Avian metapneumovirus (aMPV) is a highly contagious upper respiratory and sometimes reproductive infection affecting primarily chickens, turkeys and ducks. aMPV can cause moderate to high morbidity, loss of production and slightly increased mortality within commercial poultry flocks, contributing to economic loss.

Disease Overview

aMPV is classified as a member of the *Metapneumovirus* genus within the *Pneumoviridae* subfamily of the *Paramyxoviridae* family of viruses. There are four known antigenic sub-types of aMPV (A to D), with subtype A and B identified in chickens and turkeys and subtype C identified in turkeys and ducks. aMPV has also been referred to as swollen head syndrome (SHS), turkey rhinotracheitis (TRT), avian rhinotracheitis (ART), and avian pneumovirus infection of turkey (APV).

aMPV is an immediately notifiable disease in Canada and is a reportable disease in Manitoba under the *Animal Diseases Act.* However, aMPV is not a zoonotic disease therefore not a food safety risk or human health concern.

aMPV affects many poultry species including chickens, turkeys, broilers, layers, breeders, pheasants, ducks, game birds and guinea fowl. The virus is typically transmitted via direct contact of respiratory secretions. Animals can develop clinical signs when in close contact with infected animals. aMPV may also be transmitted via airborne aerosols. There is no clear evidence of vertical transmission of the virus (breeder to progeny).

Wild birds (e.g., waterfowl, sparrows, swallows, pigeons, falcons etc.) are considered a reservoir for aMPV and may carry and transmit the virus while remaining clinically healthy.

Typical signs and symptoms of aMPV in turkeys include foamy conjunctivitis, nasal discharge, swollen infraorbital sinuses, snicking, sneezing, coughing, rales, open mouth breathing, head shaking, submandibular edema, depression, anorexia and ruffled feathers. Turkey morbidity ranges from 40-100% while mortality ranges from 0.4-50%. Turkey breeders may experience uterine prolapse secondary to coughing, as well as a drop in egg production (up to 70%).

aMPV in chickens may be subclinical or with mild respiratory symptoms, however egg production in broiler breeders and egg quality in layers may be affected. Neurological signs such as torticollis (wry neck) and apathy have been seen. Further, in ducks, respiratory symptoms, decreased egg production and poor shell quality have been noted.

Figure 1. A chicken experimentally infected with aMPV showing signs of nasal discharge and foaming at the eyes (Suarez et al., 2019).

Figure 2. A turkey infected naturally with aMPV showing watery ocular discharge and swelling of the infraorbital sinus (Rautenschiein, 2020).

Manitoba

The incubation period for aMPV is 3-7 days, and the disease spreads rapidly within flocks. However, the virus clears quickly, and infected birds only shed virus for a few days, making diagnostic testing challenging. Recovery can take up to 3 weeks. Secondary bacterial (E. coli, ORT, Pasteurella spp., mycoplasma etc.), fungal (aspergillosis) or viral (IBV, etc.) infections are common after exposure to aMPV and may result in the development of airsacculitis and pneumonia. Although aMPV does affect all ages of birds, younger birds tend to be more susceptible.

Prevention/Treatment

There is no treatment for an aMPV infection. Good flock management practices including optimal ventilation, stocking densities, temperature control, litter quality and strong biosecurity can help to prevent and significantly reduce severity of an aMPV infection. Likewise, strong disease prevention programs coupled with proactive treatment plans for potential secondary infections will help to reduce the severity of disease.

Since aMPV is an enveloped virus, it is sensitive towards multiple disinfectants containing lipid solvents. Quaternary ammonia, ethanol, iodophors, phenol derivatives and bleach are recommended to reduce aMPV's ability to survive. aMPV is inactivated at temperatures above 50 ^{o}C but has been noted to stay viable for over 26 weeks at -20 ^{o}C and 12 weeks at 4 ^{o}C.

There are currently no licensed commercial aMPV vaccines available for use in Canada or the United States. Live attenuated and inactivated vaccines are widely used in countries where aMPV has become endemic.

Recommendations

If your flock experiences clinical signs of a respiratory disease or notable drop in production, consult your flock veterinarian and submit mortalities to the veterinary diagnostic lab for diagnosis, culture and sensitivity to medications. Prevention and/or treatment for secondary infections may be required.

Develop and maintain good management practices, including high biosecurity for the premises. Isolate sick birds and remove dead birds to prevent contact with healthy birds.

For More Information

Producers are always encouraged to first contact their flock veterinarian with questions specific to the health of their flocks. Veterinary Diagnostic Services laboratory can provide guidance on submitting mortalities for further diagnostic testing at the contact information listed below. The Chief Veterinary Office (CVO) may also be contacted at 204-945-7663 for more information on poultry health or if high flock mortality is experienced.

Veterinary Diagnostic Services
545 University Crescent
Winnipeg, Manitoba R3T 5S6
Phone: 204-945-8220 in Winnipeg
Email: vetlab@gov.mb,ca

References

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