Chronic respiratory disease of poultry

News

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Mycoplasmas are present in every species including avian but various types of Mycoplasmas are present in poultry, among which four pathogenic Mycoplasmas are Mycoplasma gallisepticum (MG), Mycoplasma synoviae (MS), Mycoplasma meleagridis (MM) and Mycoplasmas iowae (MI).

MG is the most important pathogen of poultry causing Chronic Respiratory Disease (CRD), infectious sinusitis and air sacculitis in poultry.

Mycoplasma gallisepticum is the most economically significant mycoplasmal pathogen of poultry. The major economic losses due to CRD are reduced growth rate and feed conversion, decrease egg production in breeders and commercial layers (15-25 eggs per hen housed in 60 weeks), decrease hatchability, reduced egg selection pressure because of the reduced hatching egg availability, reduced day old chick quality, increased chick mortality because of the exacerbated consequence of concurrent infection, condemnation and downgrading of carcasses, increased medication cost, costly control measures involving biosecurity, vaccination, costly eradication measures involving depopulation and site cleaning, costly monitoring programs involving serology and PCR.

The carcasses of birds sent to slaughter may also be downgraded. M. gallisepticum infections are notifiable to the World Organization for Animal Health (OIE). Bird suffering from avian mycoplasmosis showed clinical signs like rales, coughing, nasal discharge, and air sacculitis with low mortality in uncomplicated cases in chickens. Wide diversity of clinical manifestation primarily pulmonary with coughing and respiratory distress in chickens but decrease in egg production can occur.

Different clinical signs of the respiratory system include coughing, sneezing, rales, nasal discharge and conjunctivitis. Gross pathological lesion consists of mucoid to mucupurrulent exudates in trachea, bronchi, air sacs, nasal cavities but even in the absence of apparent clinical signs, the economic impact may be significant.

M. gallisepticum is transmitted during close contact between birds as well as on fomites. Aerosol spread occurs over short distances and can be responsible for transmission within a flock. M. gallisepticum is also transmitted vertically in eggs. Shedding in the egg can vary; egg transmission is more frequent in birds infected Avian Mycoplasmosis (Mycoplasma gallisepticum) during laying than in birds infected before they mature. Infected birds carry M. gallisepticum for life, and can remain asymptomatic until they are stressed.

The diagnosis of mycoplasma can be done on the basis of history, clinical signs, isolation, culturing, morphological, biochemical, serological and molecular techniques. Advanced techniques such as Amplified Fragment Length Polymorphism (AFLP) technique,

Pulsed-Field Gel Electrophoresis (PFGE), Random Amplified Polymorphic DNA (RAPD), conventional Polymerase Chain Reaction (PCR) and Real Time PCR (RT PCR) have also been applied for classification and analysis of the genetic relationships among different isolates of Mycoplasmas. Due to impact of MG in poultry flocks, several countries try to eliminate it with some achievements through active surveillance, antibiotics and manage mental practices. With development of RSPA (Rapid Spot Plate Agglutination), ELISA (Enzyme Linked Immunosorbent Assay), HI (Haemagglutination Inhibition) tests for rapid assessment of serum antibodies against MG, or PCR used for confirmation of Mycoplasma getting great attention to control it.
M. gallisepticum can be controlled by heat treatment or tylosin to eliminate egg transmission from valuable breeding animals. Biosecurity measures are important in preventing transmission on fomites.

Wild or pet birds can also carry M. gallisepticum, and should be excluded from poultry operations. Infections can be eliminated from a farm by depopulation of the flock, followed by thorough cleaning and disinfection of the premises. Most commonly used disinfectants are thought to be effective for M. gallisepticum. Recommended disinfectants for buildings and equipment include phenolic or cresylic acid disinfectants, hypochlorite, and 0.1% glutaraldehyde. Mycoplasmas are typically fragile and only survive in the environment for a few days; birds can be re–introduced after 2 weeks.

Vaccination is generally only employed where keeping the flocks free of MG are not possible. Live attenuated strains such as ts11, MG 6/85 have been tested for use in layers and breeding stock with varying levels of residual virulence, immunity. Failure of imported vaccine to provide protection against the local infectious agents may principally due to immunological and antigenic reasons.

Dr Mushtaq Ahmad, Prof Dr Masood Rabbani, UVAS, Lahore

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