EXACERBATION OF *MYCOPLASMA GALLISEPTICUM* BY ADMINISTRATION OF LIVE INFECTIOUS BRONCHITIS VACCINE IN COMMERCIAL LAYER CHICKENS

A. Balasubramaniam, P. Suresh, M. Arthanari Eswaran, K. Sukumar and

J. Johnson Rajeswar

Department of Veterinary Microbiology,

Veterinary College and Research Institute, Namakkal

Corresponding author : Email - balasubramaniam72@gmail.com

Received 1-8-2012 Accepted 11-5-2013

Mycoplasma gallisepticum (MG) infections are commonly known as chronic respiratory disease (CRD) of chickens. The infection with this bacterium is characterized by respiratory rales, coughing, nasal discharge and conjunctivitis (Ley, 2003). Economic losses from condemnation, reduced egg production and increased medication costs make CRD one of the costliest disease problems confronting poultry production. Complicating infections like colibacillosis and some live vaccines are known to result in more sever MG diseases (Mohammad *et al.,* 1987 and Gross, 1990). A case of misdiagnosis leading to use of live infectious bronchitis virus (IBV) vaccine which exaggerated CRD in layer chickens is reported.

Case history and observations: In a multiple-age commercial layer farm where all the flocks were producing eggs less than 10 per cent from standard production, a live IBV vaccine containing Massachusetts strain was administered intraocularly to all the flocks, on the advice of a poultry consultant. Three weeks after the administration of IBV vaccine, egg production further deteriorated (15 to 20%) and daily mortality of 0.3 % to 0.5 % in two young (22 and 34 weeks of age) flocks of each 10,000 birds was noticed. Feed intake was normal. The contents of the feed were analysed and found to be as per standard requirement. The average egg production of the farm came down to 65 per cent from 80 per cent. On postmortem, catarrhal and caseous exudates in bronchi, air sac in emaciated birds and egg peritonitis were observed. In these two flocks, few birds showed keratoconjunctivitis with oedema in lower eyelid in addition to worsened egg production. In older flocks, there was only further drop in egg production from 8 to 15%. The clinical signs, postmortem findings observed and the history of live IBV vaccination three weeks prior to the outbreak clearly indicated the involvement of *Mycoplasma gallisepticum.*

Treatment: All the flocks were treated with oxytetracycline long acting at the rate of 50 mg per kg body weigh parentally, enrofloxacin (Bayrocin from M/s Bayer Pharmaceuticals, Mumbai) at the rate of 10 mg per kg body weight for five days orally. During oral treatment with antimycoplasmal drugs, the egg production in the farm gradually increased to 80 per cent which is eight per cent below the standard. After three weeks of the treatment, egg production started declining without any overt signs even in young flocks. The treatment for mycoplasma was started again in the feed as follows: tylosin phosphate 10 per cent (*Tylan premix* from M/s Elanco Lilly Corp. USA) and chlortetracycline 15 per cent (*Aurofac* from M/s Fort-Dodge Animal Health, USA) for seven days i.e. 80 ppm each in the feed (chemo-preventive dose) which resulted in increase in egg production to 80 per cent.

Discussion and conclusion: This incidence illustrated the exacerbation of chronic respiratory disease by live IBV vaccine containing Massachusetts strain. Once the flock is infected with MG, it is impossible to obtain satisfactory egg production without the antimycoplasmal drugs. Complete elimination of MG from all birds in an infected flock by mass antimycoplasmal therapy is an unrealistic expectation (Levisohn and Kleven, 2000). In tissue culture, the capability of MG to enter into nonphagocytic cells was reported by Winner *et al.* (2000). This incidence proves the point in which

the infectivity of MG was higher when it was challenged along with a strain of IBV, as reported by Soreipto *et al*. (1989) in experimental trial. Nakamura *et al.* (1994) suggested that the field use of mixed live vaccine in flocks infected with MG may induce *Escherichia coli* septicaemia. The invasiveness of MG increased in presence of virus replicating in respiratory tract, IBV in this case. Similarly, the presence of rhinotraceitis virus in turkey caused the Mycoplasma to be more invasive (Naylor *et al.* 1992). This emphasizes the need of keeping the laying flock with reduced level of *Mycoplasma gallisepticum*, if not free, before administration of live IBV vaccine. It also necessitates careful consideration for administration of live IBV vaccine in pullets and layers.

REFERENCES

Gross, W.B. (1990). Factors affecting the development of respiratory disease complex in chickens. Avian Dis **34**: 607-610.

Levisohn, S. and Kleven S.H. (2000). Avian mycoplasmosis *Mycoplasma gallisepticum*). Rev Sci Tech **19**: 425-442.

Ley, D.H. (2003). *Mycoplasma gallisepticum* infection. In Y.M. Saif *et al.* (eds.) Diseases of

Poultry. IowaStatePress, USA,722-744.

Mohammed, H.O., Carpenter, T.E.and Yamamot,o R.. (1987). Economic impact of *Mycoplasma gallisepticum* and *M. synoviae* in commercial layer flocks. Avian Dis **31**:477-482.

Nakamura, K., Ueda, H., Tanimura T.and K. Noguchi. (1994). Effect of mixed live vaccine (Newcastle disease and infectious bronchitis) and *Mycoplasma gallisepticum* on the chicken respiratory tract and on *Escheichia coli* infection. Journal of Comparative Pathology **111**: 33-42.

Naylor, C.J., Al Ankari, A.R., Afaleq, A.I., Bardbury, J.M. and Jones, R.C. (1992). Exacerbation of *Mycoplasma gallisepticum* in turkeys by rhinotracheitis virus. Avian Pathology **21**: 295-305.

Soeripto, K., Whithear, G., Cottew, G.S. and Harrigan, K.E. (1989). Virulence and transmissibility of *Mycoplasma gallisepticum.* Aust Vet J **66**: 65-72.

Winner, F. Rosengarten, R. and Citti, C. (2000). In vitro cell invasion cell invasion of *Mycoplasma gallisepticum.* Infect Immun **68**: 4238-4244.

❑