Chronic respiratory disease outbreak in an organized native chicken farm

Abstract

Indian poultry industry is moving with rapid strides in the global market but disease outbreaks cause a major setback to this huge industry. Chronic respiratory disease (CRD) caused by Mycoplasma gallisepticum (MG) is one among the important poultry disease affecting the growth of the industry. This current communication presents the outbreak of CRD among native chicken breeds in an organized farm of India. Post mortem investigation was carried out in the farm as mortality was reported to be 5% and morbidity was 50%. Samples namely trachea, lung, air sac and infra orbital sinus were collected for identifying the causative agent and were subjected to bacteriological and virological detection tests. Samples were found positive for MG by conventional bacteriological method while other bacteriological and virological agents were found negative. Isolates on further characterization using Mycoplasma specific PCR and MG specific PCR revealed that the isolates belong to MG and proved the involvement of the bacterium in causing the disease. Histopathology of the samples also showed the presence of necrotic material and infiltration of lymphocytes. Based on gross pathology, histopathology, isolation and molecular characterization showed that the disease was CRD caused by MG. Thus this reports warrants need for further insights into the clear picture on the status of CRD among native chicken breeds of India so as to carve out a better prevention measure.

Keywords: chronic respiratory disease, native chicken, Mycoplasma gallisepticum, India, PCR, investigation

Introduction

The poultry industry is growing at a rapid phase worldwide in the recent years to meet the global demand for good quality protein. This rapid increase in production is projected to move further in various parts of the world including India. Indian poultry industry is among the top producers of egg and meat production in the world but poultry population is not constant among the states of India. Andhra Pradesh, Telangana, Tamil Nadu leads the country’s poultry production followed by Maharashtra, Punjab and West Bengal. This profitable industry has also witnessed the threats caused by pathogens leading to huge mortality of the birds. Among the reported diseases of poultry, chronic respiratory disease (CRD) is one of the important diseases as it can cause higher morbidity thus decreasing the production. CRD is reported from several parts of the world in both poultry layer and broiler stocks. Mycoplasma gallisepticum (MG), a cell wall less bacteria is responsible for CRD which is characterized by coughing, respiratory rales, nasal discharge, infra orbital sinusitis and air sacculitis. The disease has been recorded in layers and breeders causing embryo mortality and also drops in egg production. All age group chickens and turkeys are susceptible to MG but young birds are considered to be affected severely than old birds. Both horizontal and vertical transmission has been documented in MG infection. In India sero diagnosis of MG has been reported at various time frames from various states. Earlier studies show 58.18% sero positivity in Wayanad district of Kerala, India while 53.40% sero positivity was recorded in Namakkal district of Tamil Nadu, India. Recent sero prevalence study conducted in seven states of India showed an overall prevalence of 32.06%, of which highest prevalence was noted in Telangana (50%) while Karnataka state had lowest prevalence (20%). Sero prevalence studies are mainly carried out in India and isolation, molecular characterization studies are less. In order to meet the high demand of poultry industry exotic, genetically improved poultry breeds are developed. Major drawback of these improved breeds is their lower resistance to disease resistance compared to indigenous or native breeds. To the best of our knowledge reports regarding isolation, molecular and histopathological confirmation of MG in Indian native chicken breeds are inadequate. The present study documents clinical signs, postmortem and histopathology lesions followed by isolation and molecular confirmation of MG in an organized native poultry farm in Tamil Nadu state, India.

Materials and methods

Clinical picture and sample collection

An organized farm with a flock strength of 400 native birds of various age groups was reported to have respiratory problems like nasal discharge, swelling of the infra orbital sinus and respiratory rales. Mortality 5% and morbidity of 50% was reported. Postmortem was carried out for four dead birds with similar clinical signs at Central University Laboratory, Tamil Nadu Veterinary and Animal Sciences University, Chennai, India. Gross lesions like sinusitis, conjunctivitis, tracheitis with yellow cheesy material in trachea, air sacculitis with cheesy material and pneumonia were noted (Figure 1). Heart blood swab, tracheal swab, air sac swab, infra orbital sinus swab, liver surface swab were collected in ice. Trachea, lungs, infra orbital sinus and air sac were collected in ice and also in 10% formalin separately for isolation and histopathology respectively. Samples were also subjected to diagnose infectious laryngotracheitis (ILT) by PCR so as to rule out the exact cause of the disease.