ISSN: 2977-4047

Journal of Life Sciences Research and Reviews

SCIENTIFIC Research and Community

Case Report

Open Access

Patho-Epidemiological Study of Chronic Respiratory Disease (CRD) in Commercial Layer Chickens: A Case Report

Yahye Yasin Hassan[1*], Ahmed Abdi Mohomed[2], Mustafa Ibrahim Ali[3] and Abdirahman Dek Ibrahim[4]

[1]Department of Parasitology and Pathology, College of Veterinary Medicine, Jigjiga University, Ethiopia

[2]Department of Epidemiology, College of Veterinary Medicine, Jigjiga University, Ethiopia

[3]Faculty of Agriculture and Veterinary Medicine, East Africa University, Garowe, Somalia, Ethiopia

[4]Department of Parasitology and Pathology, College of Veterinary Medicine, University of Kebridahar, Ethiopia

ABSTRACT

Chronic Respiratory Disease (CRD), caused by Mycoplasma gallisepticum, is one of the most economically significant diseases of poultry worldwide. This case report describes the clinical, pathological, and epidemiological features of CRD in a commercial layer flock in Jigjiga, Somali Regional State, Ethiopia. A total of 5,100layer chickens reared under a deep litter system were affected. The outbreak resulted in 505 deaths, representing an overall mortality of 9.90%, and 1,417 clinically affected birds, giving a morbidity rate of 27.78%. Morbidity and mortality were higher in Block B (33.11% and 10.88%) than in Block A (25.11% and 9.41%), indicating increased susceptibility among older birds. Clinically, affected chickens exhibited respiratory distress, coughing, nasal discharge, and open-mouth breathing. Postmortem findings included catarrhal exudate in the trachea and bronchi, cloudy and foamy air sacs, and air sacculitis. Based on clinical signs and gross pathology, the condition was diagnosed as CRD. Treatment with Tylosin 20% (0.5 g/L of drinking water), coupled with improved ventilation, reduced overcrowding, and strict biosecurity, resulted in recovery of the flock. The study highlights the continued importance of CRD as a major health and economic threat in layer operations and underscores the need for routine monitoring, early diagnosis, and effective preventive measures.

***Corresponding author**

Yahye Yasin Hassan, Department of Parasitology and Pathology, College of Veterinary Medicine, Jigjiga University, Ethiopia.

Received: November 03, 2025; **Accepted:** November 12, 2025; **Published:** November 18, 2025

Keywords: Chronic Respiratory Disease, Pathology, Poultry, Epidemiology, Ethiopia

Introduction

Chronic Respiratory Disease (CRD) is one of the most economically important diseases of chicken [1]. This disease is caused by Mycoplasma gallisepticum which are pleomorphic and lacks the ability of Gram staining, therefore the characterization of mycoplasmas based on morphological Characteristics is non effective [2]. Mycoplasma gallisepticum infection spreads horizontally from bird to bird through direct contact, aerosols, and contaminated equipment, and it can also be transmitted vertically through infected eggs from hens to their offspring [3].

Gasping, respiratory rales, coughing, nasal discharge and rhinitis are the major signs of Chronic Respiratory Disease (CRD). Sometimes M. gallisepticum causes arthritis, salpingitis, conjunctivitis and fatal encephalopathy, In the commercial layer chickens, it causes marked decrease in eggs production and embryo mortality [4]. Diagnosis is made based on history, clinical signs and symptoms, post mortem findings [5].

Therefore, the objective of this case report is to show the clinical sign, postmortem examination and treatment approaches and the impact of those interventions towards chronic respiratory disease in a poultry farms.

Case History and Clinical Observations

A poultry farmer residing in Jigjiga, Somali Regional State, Ethiopia, reported a case of respiratory distress in a flock of commercial layer chickens, accompanied by the mortality of 505 birds within four days. According to the owner, the birds were reared under a deep litter system using sawdust as litter material. The farmer observed abnormal respiratory sounds, nasal discharge, sneezing, coughing, and open-mouth breathing among the affected birds. In addition, feed consumption had decreased, and the birds showed progressive weight loss. No medication had been administered prior to the onset of the disease. Clinical examination revealed dyspnea, rales, and open-mouth breathing. A marked drop in egg production was also reported, declining from 85% to approximately 60%. Post mortem examination of the dead birds showed the presence of inflammatory material (Catarrhal exudate) in trachea, bronchi, and Aracialities with cloudy and foamy air sacs (Figure 1).

Figure 1: A: Gasping, open-mouth breathing B: Presence of inflammatory material (catarrhal exudate) in trachea. C: Airsacculitis with cloudy and foamy air sacs

Treatment

Based on the flock history, clinical signs, and postmortem examination findings, the case was tentatively diagnosed as chronic respiratory disease (CRD). Treatment was initiated with Tylosin 20%, administered at a dosage rate of 0.5 g per liter of drinking water. The farmer was further advised to isolate the sick and suspected birds, ensure adequate ventilation, reduce dust levels within the poultry house, avoid overcrowding, and implement strict biosecurity measures in and around the farm premises. during a follow-up telephone conversation, the owner reported that the birds had become active, alert, and had returned to normal condition following treatment.

Results and Discussion

Out of a total of 5,100 commercial layer chickens reared on a single farm consisting of two production houses (Block A and Block B), a total of 505 birds died, resulting in an overall mortality rate of 9.90%. The mortality was slightly higher in Block B (10.88%) compared to Block A (9.41%). The overall morbidity rate was 27.78%, with 33.12% in Block B and 25.12% in Block A, indicating a higher disease occurrence among the older flock (30 weeks) than in the younger one (17 weeks). The case fatality rate (CFR) ranged from 32.86% in Block B to 37.47% in Block A, with an overall mean of 35.64%, suggesting that once birds were clinically affected, a substantial proportion succumbed to the disease.

Table 1: CRD under study along with Morbidity, Mortality Patterns and Age of the Affection

Farm block	Total number of birds	Age of birds (week)	Number affected	Number of Death	Morbidity (%)	Mortality (%)	CFR (%)
Block A	3400	17week	854	320	25.11	9.41	37.47
Block B	1700	30week	563	185	33. 11	10.88	32.85
Total	5100		1417	505	27.78	9.90	35.64

The present findings are in agreement with [2,6]. who reported CRD-associated mortalities ranging from 1% to 10%, but differ from the lower rates reported by (0.4%–2%) [7,8]. abnormal respiratory sounds, nasal discharge, sneezing, coughing, and open-mouth breathing among the affected birds similar clinal sign with [9]. the presence of inflammatory material (Catarrhal exudate) in trachea, bronchi, and Airsacculitis with cloudy and foamy air sacs [10]. These results indicate that Chronic Respiratory Disease (CRD) remains a major health and economic challenge in layer operations, leading to considerable mortality, high morbidity, and production losses. Implementation of strict biosecurity, and improved ventilation.

Declarations

Participant Consent Statement

Informed consent was obtained from the legal guardian of the commercial poultry
farm affected. The guardian agreed to the participation of the farm in this case report and consented to the publication of the clinical and pathological findings described in this case report. All procedures and data collection were conducted in accordance with ethical standards, ensuring confidentiality and proper handling of all information.

Availability of Data and Materials

The datasets generated and analyzed during the current study are available from the corresponding author upon reasonable request.

Conflict of Interest

The authors declare that there are no conflicts of interest associated with this publication.

Funding

This study did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Acknowledgments

The authors sincerely thank the poultry farm owners and staff for their cooperation, hospitality, and assistance during the field investigation and data collection process

References

1. Karthik K, Bharathi R, Mahaprabhu R, Manimaran K, Shoba K (2018) Chronic respiratory disease outbreak in an organized native chicken farm. Journal of Dairy, Veterinary & Animal Research 7: 79-82.
2. Bayan R, Ujjan JA, Noureen A, Noman M, Malik MI (2021) Seroprevalence of Mycoplasma gallisepticum amongst Commercial Layers in District Peshawar, Khyber Pakhtunkhwa Pakistan. International Journal on Emerging Technologies 12: 128-133.
3. Ramadan N (2019) Mycoplasma gallisepticum overview in poultry. Am J Biomed Sci Res 4: 354-355.
4. Shoaib M (2019) Mycoplasmosis in poultry, a perpetual problem. The Journal of Microbiology, Biotechnology and Food Sciences 8: 1271.
5. Singh LK, Devi KM (2020) Chronic respiratory disease in poultry: case report. Electronic file available at https://epashupalan com/4401/animal-disease/chronic-respiratory-disease-in-poultry-case-report/ Accessed on 27: 23.
6. Nunoya T, Kanai K, Yagihashi T, Hoshi S, Shibuya K (1997) Natural case of salpingitis apparently caused by Mycoplasma gallisepticum in chickens. Avian Pathology 26: 391-398.
7. Chary P, Padmavathi G, Sudhakar R, Reddy A, Rao P (1991)

A study on mortality pattern in poultry.

8. Radi Z (1997) Avidin-biotin immunohistochemical detection of Mycoplasma gallisepticum antigens in turkey respiratory tissues with rabbit polyclonal primary antibodies.
9. Susitha Rajkumar SR, Reddy M, Somvanshi R (2017) Molecular detection and pathology of spontaneous cases of Chronic Respiratory Disease in chicken.
10. Vegad JA (2007) Colour atlas of poultry diseases: an aid to farmers and poultry professionals: International Book Distributing Company.