

ASSESSMENT OF AN INFECTIOUS BURSAL DISEASE OUTBREAK IN BROILERS IN WESTERN ROMANIA

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Abstract: This study investigates an outbreak of Infectious Bursal Disease (IBD) in broiler chickens on a commercial farm in Western Romania during 2023–2024. The outbreak affected four poultry houses operating with permanent litter systems. Clinical, epidemiological, and anatomopathological evaluations were conducted, and reverse transcription PCR (rPCR) was employed to confirm the viral strains involved. Clinical signs emerged at 21 days of age and included lethargy, decreased feed intake, huddling, and white watery diarrhea near the cloaca. The outbreak lasted six days, with peak mortality on the fifth day. Pathological findings revealed classical IBD lesions, notably hypertrophy of the bursa of Fabricius. Molecular testing identified both very virulent (vvIBDV) and attenuated (attIBDV) strains. The investigation also revealed major lapses in farm biosecurity, such as inadequate sanitary barriers and uncontrolled movement of personnel and vehicles. These findings highlight the critical role of effective biosecurity, vaccination strategies, and hygiene protocols in preventing and managing IBD outbreaks in poultry operations.

Introduction

Infectious Bursal Disease (IBD) is a highly contagious viral disease that severely impacts poultry health and productivity, particularly in young chickens. Caused by *Avibirnavirus*, the infection targets the bursa of Fabricius, leading to immunosuppression and increased susceptibility to secondary infections. Between 2023 and 2024, an outbreak investigation was conducted on a commercial broiler farm in Western Romania. The study employed clinical, pathological, molecular, and epidemiological methods to characterise the outbreak and identify contributing factors. Findings highlight the interplay between viral virulence and farm-level biosecurity, emphasizing the urgent need for improved management practices, vaccination protocols, and continuous disease monitoring in intensive poultry systems.

Material and method

This study was conducted from 2023 to 2024 on a commercial broiler farm in Western Romania, involving four poultry houses where broiler chickens were reared on permanent litter. The first signs of Infectious Bursal Disease (IBD) appeared at 21 days of age. Clinical, epidemiological, anatomopathological, and molecular investigations were performed to confirm the outbreak and identify the viral strain involved.

A longitudinal study was undertaken to determine the infection source, transmission routes, risk factors, and mortality impact. Cumulative mortality rates were calculated relative to the initial flock size (33,500 birds per house).

Clinical signs—lethargy, huddling, diarrhea, and locomotor issues—were observed during weeks three and four. Daily necropsies were performed, and a total of 102 cadavers were examined for gross lesions, particularly in the bursa of Fabricius. Tissue samples from affected organs, including the bursa, were analysed using molecular biology techniques (rPCR) to confirm the diagnosis and characterise the viral strain.



Fig. 3.1.



Fig. 3.2.

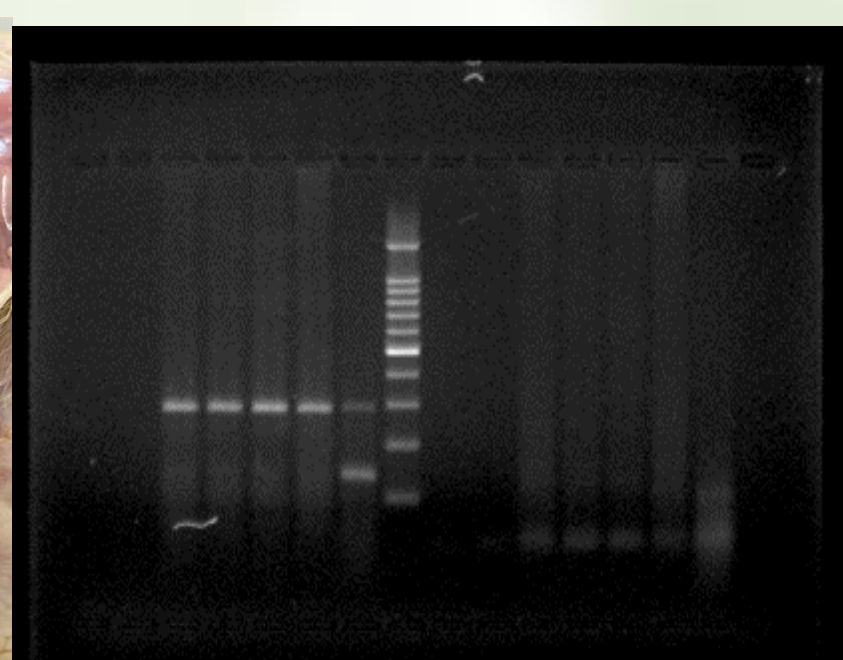


Fig. 3.3.

Results and discussions

Between 2023 and 2024, an outbreak of Infectious Bursal Disease (IBD) affected four broiler houses on a commercial farm in Western Romania. Clinical signs appeared at 21 days of age, including lethargy, reduced feed intake, huddling, and chalky diarrhea. Mortality peaked on the fifth day of the outbreak, with cumulative rates between 0.26% and 0.39%.

Epidemiological assessment revealed major biosecurity breaches, such as inadequate sanitary barriers, uncontrolled personnel and vehicle access, and unfavorable environmental factors, particularly high ammonia levels and overcrowding.

Necropsies on 46 birds revealed characteristic bursal lesions—catarrhal (Fig. 3.1), hemorrhagic (Fig. 3.2), and fibrinous bursitis—in 53% of cases. Molecular testing (rPCR) identified the simultaneous presence of both very virulent (vv) and attenuated (att) IBD virus strains (Fig. 3.3), indicating co-circulation of multiple pathotypes.

These findings are consistent with existing literature, confirming IBD's rapid spread, immunosuppressive impact, and the role of poor biosecurity in disease emergence. Environmental stressors likely weakened the birds' immune defences, increasing susceptibility. The detection of vv and att strains supports ongoing concerns about viral evolution and vaccine efficacy.

Overall, the study emphasizes the need for strict biosecurity, effective vaccination strategies, and continuous viral monitoring to control IBD in intensive poultry systems.

Conclusions

Infectious Bursal Disease (IBD) was diagnosed in all four broiler houses on the studied farm. The cumulative mortality during the study period was 1.93% in House 1, 1.73% in House 2, 1.89% in House 3, and 1.73% in House 4.

Mortality losses during the course of the IBD outbreak ranged from 0.26% to 0.39%.

Clinical examinations revealed the development of the classic form of IBD in the studied population, while pathological examinations identified macroscopic lesions characteristic of the disease.

The rPCR test confirmed the presence of the IBD virus in all four houses, with the isolated strains classified as very virulent.

It is recommended to strictly follow immunoprophylaxis protocols and address the existing technological and hygiene deficiencies within the farm to prevent future outbreaks.