

Case Report



An Outbreak of Newcastle Disease in a Commercial Poultry Farm in Jigjiga, Ethiopia: A Case Report

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Abstract

Newcastle disease is a highly contagious and economically damaging viral disease that affects chickens worldwide. It is characterized by high mortality rates, reaching up to 100% in unvaccinated flocks. This case report describes Newcastle disease outbreak at a small-scale poultry farm in Qordher, Jigjiga, Ethiopia during the month of January, 2025. The farm initially housed 1500 chickens with no prior vaccination history. When the outbreak was reported, 120 chickens had died, and several exhibited clinical signs such as reduced feed intake, coughing, wing drooping, neck twisting, incoordination, greenish watery diarrhea, and depression. Post-mortem examinations revealed hemorrhages in the trachea, proventriculus, caecal tonsils, and intestinal wall. To manage the outbreak, Oxytetracycline HCl (200 mg/4.5 L of drinking water for 5-7 days) was administered to control secondary bacterial infections, and Stresswin (100 g/200 L of water for 3-5 days) was used as an immune stimulant. Additionally, the owner was advised to implement biosecurity measures, including isolating sick birds, improving ventilation, and reducing overcrowding.

Keywords: Biosecurity, Newcastle disease, Poultry, Postmortem findings, Vaccination

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Introduction

Newcastle disease is a severe and extremely infectious viral infection that affects both domestic and wild birds worldwide (1). It causes huge economic losses to the commercial poultry farmers round the world (2). Newcastle disease is the most important cause of economic losses to poultry production in Ethiopia. The disease has different local names, but the most commonly used is “Yedoro Fengle” (3) Newcastle disease virus is also known as an avian paramyxovirus serotype 1 (APMV-1). It is a member of the Paramyxoviridae family, subfamily Avulavirinae, genus *Orthoavulavirus*, and species avian orthoav ulavirus. The genome encodes six structural proteins: nucleocapsid protein, phosphoprotein, matrix protein, fusion protein, haemagglutination-neuraminidase protein, and RNA polymerase protein (4). Newcastle disease virus (NDV) strains have been classified into three 50 groups, based on their pathogenicity in infected chickens: high virulence (velogenic), moderate 51 virulence (mesogenic), and low virulence (lentogenic), (5). Newcastle disease is very contagious and is easily spread from one bird to another. The infection is usually transmitted by direct contact with sick birds or unaffected birds carrying the virus. Even vaccinated birds that are clinically healthy can excrete virulent virus after they have been exposed. Virus can also be transmitted indirectly by people, other animals, equipment, vehicles, contaminated poultry products, feed and water (1,6).

Various clinical signs are present in NCD affected animal that depend on the virulence and tropism of the NCD virus involved, the species, age of host and the immune status of the host and environmental conditions. Initial clinical signs vary but include anorexia, lethargy, ruffled feathers, edema and injection of conjunctiva. As the disease progresses, birds may develop watery greenish or white diarrhea, and dyspnea. In later stages of the disease, neurologic signs including; wing/leg paresis or paralysis, tremors, spasms, torticollis and aberrant circling behavior are are evident. In layers sharp egg drop abnormalities in egg can be seen.

In Ethiopia, the first confirmed case of the disease was recorded in 1971, following the occurrence of an outbreak in Asmara, Eritrea. The disease is then gradually spread across the country by wild birds and other risk issues. It has grown endemic in the village and commercial poultry populations, and it recurs every year, resulting in significant financial losses (6).

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 New Castle outbreak in a small scale farm.

Case History and Clinical Observations

A case was reported in the poultry farm a located at Qordher, Jigjiga city during the month of January, 2025 with a complaint history of having reduced feed intake,



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depression, gasping, coughing, wing drooping, greenish watery diarrhea, head tremors, torticollis, incoordination, wing and leg paralysis, the chief evident. In layers sharp egg drop abnormalities in egg can be seen (7).

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poultry populations, and it recurs every year, resulting in significant financial losses (8).

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 New Castle outbreak in a small scale farm complaint was that among 1500 numbers of birds, 120 birds were found dead after showing the clinical signs. A visit to the farm revealed poor hygienic measures and inadequate



Figure 1. Clinical Signs of Bovans Brown Female Chickens Diseased With Newcastle Disease. A: Chicken exhibiting neck twisting (torticollis), B: A chicken experiencing wing paralysis (wing drooping), C: Leg paralysis, D: Greenish watery diarrhea

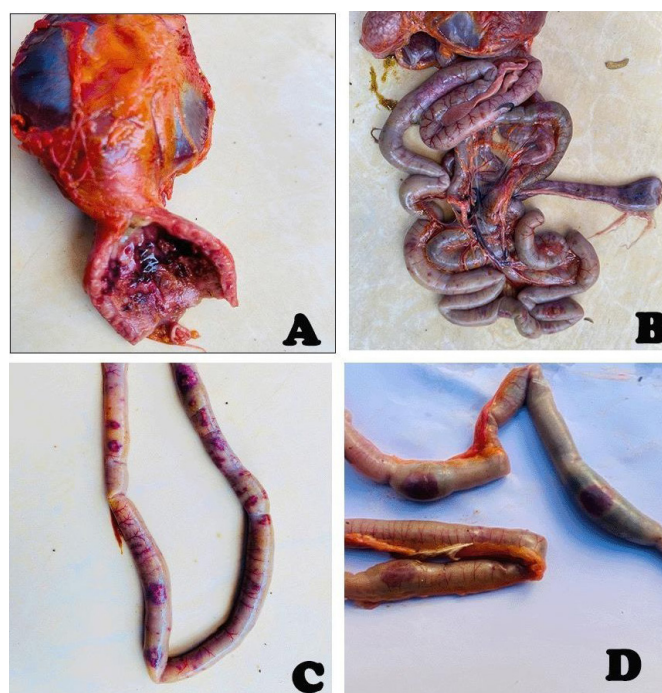


Figure 2. Post-mortem Lesions of Bovans Brown Female Chickens Diseased With Newcastle Disease. A: Pinpoint haemorrhages on the tips of glands in the proventriculus, B: Hemorrhage in the gut, C: Pinpoint haemorrhages on the intestinal wall, D: Gross haemorrhagic lesions in the intestinal wall

ventilation. On further enquiry, the farmer added that no flock records and no vaccination history of Newcastle disease (Figure 1).

Postmortem Examination

At necropsy, pinpoint haemorrhages on the tips of glands in the proventriculus, enlarged and haemorrhagic caecal tonsils, haemorrhagic lesions in the intestinal wall. Marked congestion of trachea, often with haemorrhages, were evident (Figure 2).

Case Management

Based on history, visual observation of clinical signs and postmortem examination finding, the case was tentatively diagnosed as Newcastle disease. As a result, the treatment was targeted at reducing secondary bacterial complications, Oxytetracycline HCl B.P, 200 mg (Ashoxy, 20%), 200-400 mg per 4.5 L of drinking water (1-2 g per 4.5 L of water) for 5-7 days was given, and to improve immunity to combat infectious diseases it was given Stresswin 100 g per 200 L drinking water for 3-5 days. The owner was further advised to isolate the sick and suspected birds from the flock, maintain proper ventilation, reduce overcrowding of birds and maintain strict biosecurity measures in and around the farm premises and minimizing travel on and off the facility.

Results and Discussion

Based on case history, clinical symptoms, gross lesions of postmortem findings, the case was tentatively diagnosed as Newcastle disease. In the present case, Symptoms such as depression, weakness, lying down, green diarrhoea, swelling of the face, and nervous signs may appear, ending in exhaustion and death. Other signs include twisting of the neck, paralysis of legs and arched position of the body. Followed by complete stoppage of laying. These clinical signs are in line with the clinical signs listed by (9). Haemorrhages on the tips of glands in the proventriculus, enlarged and haemorrhagic caecal tonsils, haemorrhagic lesions in the intestinal wall. Marked congestion of trachea, often with haemorrhages. This is in agreement with the (10).

As with almost all avian viruses, there is no cure for Newcastle disease. The best control measure remains prevention and is mainly based on vaccination. It

considerably reduces mortality, protects the birds and allows farmers to increase their income through sales. In regions where the disease is endemic, especially in developing countries, the measures put in place revolve around the following actions: systematic vaccination programme and improved biosecurity in commercial farms (10).

Competing Interests

None to declare.

Ethical Approval

Not applicable.

Funding

Not applicable.

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