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Case Report

CASE REPORT OF COLIBACILLOSIS IN A 33-WEEK-OLD LAYER FLOCK

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ABSTRACT

This case report is that of colibacillosis infection in a 33-week-old layer flock. The flock had 6,200 laying Isa brown pullets. The primary complaint was reduced feed intake, a drop in egg production (from 78% to 51%), whitish-green watery faeces, persistent mortality and poor quality of eggs. The birds were vaccinated 2 weeks before farm visit with Newcastle Disease (Lasota) vaccine via drinking water and were previously treated with Amoxycol(R) (Amoxycillin, Colistin) and liver tonic by the farmer. Physical examination revealed sneezing, nasal discharge, somnolence, perineum matted with whitish-green faeces and lethargy. Post mortem examination revealed pneumonic and edematous lungs, slightly enlarged friable liver with necrotic pallor, perihepatitis and mucoid enteritis. Culture of the samples collected showed that the isolate was*Escherichia coli* while theAntimicrobial Sensitivity Test results from collected blood and liver samples showed that the isolate was sensitive to Gentamycin, Enrofloxacin, and Doxygen(R) (Gentamycin, Doxycycline) but resistant to Furaltadone, Tylosin tartrate and Amoxycol(R). The flock was placed on Doxygen® at 100g per 400 liters of drinking water for 5 consecutive days. The farmer was advised to maintain strict biosecurity measures within the farm premises and to include Isochlor® in the drinking water of the flock.

Keywords: *Escherichia coli*, Colibacillosis, Isa brown, Layers

INTRODUCTION

Colibacillosis, a syndrome caused by *Escherichia coli (E. coli),* is one of the most common infectious bacterial diseases of the layer industry. *Escherichia. coli* is always found in the gastrointestinal tract of birds and disseminated widely in feaces; therefore, birds are continuously exposed through contaminated feaces, water, dust and the environment (Charlton, 2006). Birds of all ages are found to be susceptible to colibacillosis (Johnson *et al*., 2001). Factors affecting host susceptibility for colibacillosis include compromised skin or mucosal barriers (for example, unhealed navel, wounds, mucosal damage from infections), immunosuppression, nutritional deficiencies, environmental contaminants, poor ventilation, contaminated water and stress exposure (Barnes *et al*., 2013). Multiple antimicrobial resistance traits of avian pathogenic *E. coli* have been associated with transmissible R-plasmids (Timothy *et al*., 2005).

CASE HISTORY AND PHYSICAL EXAMINATION

History revealed that 33-week-old Isa brown layers with a flock size of 6,200 and average body weight of 1.6kg started dying (mortality rate of 4%) five days prior to farm visit. The birds were housed in battery cages, fed on commercial feed. Feed and clean water were provided for the birds *ad libitum.* The flock was vaccinated with NewCastle Disease (Lasota) vaccine via drinking water about 2 weeks before the visit. They were also previously treated with Amoxycol® (Amoxicillin, Colistin) and liver tonic by the farmer.

The primary complaints include reduced feed intake, a drop in egg production (from 78% to 51%), watery greenish white feaces, poor quality of eggs, persistent mortality and

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lethargy. Physical examination revealed respiratory signs such as sneezing and nasal discharge. Somnolence, perineum matted with greenish white faeces and lethargy were also observed.

POST MORTEM EXAMINATION

At post mortem, the lesions observed include slightly enlarged friable liver with necrotic pallor (Fig I), pneumonic and oedematous lungs (Fig II), mucoid enteritis (Fig III) and perihepatitis.

Figure I: Slightly enlarged friable liver with necrotic pallor

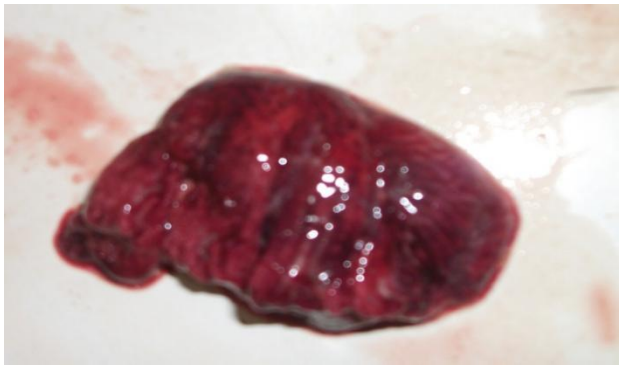

Figure II: Pneumonic and oedematous lungs

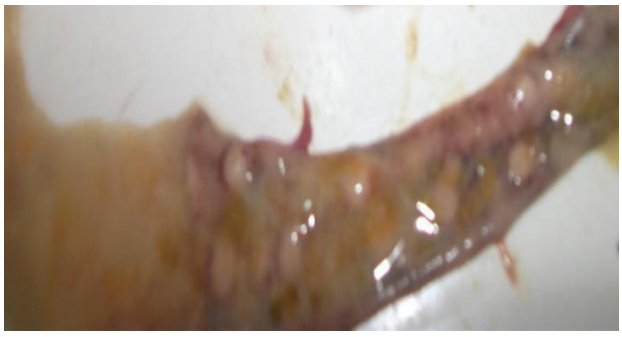

Figure.III: Mucoid enteritis

DIFFERENTIAL DIAGNOSES

Colibacillosis, Fowl Typhoid and Chronic Respiratory Disease

TENTATIVE DIAGNOSIS: Colibacillosis

LABORATORY RESULTS:

A carcass and 2mls of blood sample from one of the birds were taken to laboratory for culture on nutrient agar and Eosin Methylene Blue (EMB) using standard procedures. Antimicrobial sensitivity test was also conducted using the disc diffusion procedure (Baeur, 1996). The antibiotics used were Gentamycin (10%), Enrofloxacin (20%), Doxycycline (40%), Streptomycin (1000mg/gm), Colistin (300,000IU), Furaltadone (20%), Amoxycillin and Tylosin tartrate (100%). The isolates were classified as sensitive, intermediate or resistant to each of the antibiotics according to the Clinical and Laboratory Standard Institute (CLSI), (2012).

TABLE I: ANTIMICROBIAL SENSITIVITY TEST RESULT FROM COLLECTED BLOOD AND LIVER SAMPLES

SENSITIVE	INTERMEDIATE	RESISTANT
Gentamycin	Streptomycin	Furaltadone
Enrofloxacin	Colistin	Tylosin tartrate
Doxycycline		Amoxycillin

CONFIRMATORY DIAGNOSIS

Based on history, physical examination, observation of clinical signs, post mortem examination and laboratory analysis, the case was confirmed to be colibacillosis

TREATMENT AND MANAGEMENT

Doxygen® (Gentamycin, Doxycycline) was administered at 100g per 400 liters of drinking water for 5 consecutive days, Vitaminolyte$^{(R)}$ (Multivitamin, Amino-acids and Electrolytes) was given to the birds at 1g/ 2litres × 6/7,Anilivfit$^{(R)}$ (Sorbitol, L-Camitine, Choline, Methionine, Lysin, Betaine) was also administered at 1ml/2 litres drinking water × 5/7.

DISCUSSION

Colibacillosis, a syndrome caused by *Escherichia coli* (*E. coli*), is one of the most common infectious bacterial diseases of the layer industry. It causes significant economic losses (due to high mortality rates) worldwide (Regione & Woodward, 2002; Vegad & Katiyar, 2008). Colibacillosis has been reported to cause sporadic deaths both in layer and breeder flocks and has been noted to be the most common cause of mortality in commercial layer and breeder chickens (Nolan *et al.*, 2013).

Escherichia. coli is always found in the gastrointestinal tract of birds and disseminated widely in feaces; therefore, birds are continuously exposed through contaminated feaces, water, dust and the environment (Charlton, 2006).

Multiple antimicrobial resistance or Multidrug resistance (MDR) traits of avian pathogenic *E. coli* have been associated with transmissible R-plasmids (Timothy *et al*., 2005).

Clinical signs observed in this present case such as drop in feed intake, watery greenish white feaces and persistent mortality are in agreement with those reported by Amit *et al*. (2019) where colibacillosis was reported in broilers. Post mortem lesions observed in this case such as perihepatitis also agrees with same reported by Amit *et al*. (2019). The reduction in egg production and mortality observed is similar to that reported by Vandekerchove *et al*. (2003) as seen in colibacillosis in caged layer hens.

The antibiotic treatment (Doxygen®) (Gentamycin, Doxycycline) was administered for the treatment of the bacterial infection in the birds although broad spectrum antibiotics such as sulfa drugs and gentamycin are commonly used to control the infection (Singh *et al.,* 2011). Anilivfit$^{(R)}$ was administered to help the activities of the liver, because of decrease in weight and bone breaking strength due to possible increase in the amount of endotoxin in blood circulation (Mireles *et al.,* 2005).

Vitaminolyte$^{(R)}$ which contains; Vitamins A, C, D, E along with selenium, β-carotene and iron, was given to improve the bird's immune status (Shane, 2001; Sanda *et al*., 2015). Cessation of mortalities after onset of therapy indicates that Doxygen® (which was chosen as the drug of choice based on sensitivity test) was effective.

CONCLUSION

From the findings of this present study, it is noted that administration of Doxygen (through drinking water) for 5 days together with vitamins and Anilivfit® was effective for the treatment of colibacillosis in layers.

The farmer was advised to maintain strict biosecurity within the farm premises.

REFERENCES

Amit Baranwal, N.P., Singh, A.K., Avneesh Kumar, P.K. & Srivastava, A.K. (2019).Colibacillosis in Broilers: A case report. *Journal of Entomology and Zoology Studies*, 7(5), 163-166.

Barnes, H.J., Nolan L.K. & Vaillanwurt, J.P. (2013). Colibacillosis, Diseases of Poultry. 13th ed. Ch.Ames: Wiley-Blackwell, Print. 716-757.

Baeur A.W., Kirby W.M., Sherris J.C. & Turck M. (1996). Antibiotic susceptibility testing by a standardizedsingle disk method. *American Journal of Clinical Pathology*, 45, 493-496.

Charlton, B.R. (2006). Avian Disease Manual. 6th edn. American Association of Avian Pathologists. Athens.

CLSI (2012). Performance standards for antimicrobial susceptibility testing. Clinical and Laboratory StandardInstitute (CLSI). *Twenty Second Informational Supplement M100-S22*, 32 (3), 10-78.

Johnson L.C., Bilgili S.F., Hoerr F.J., Murtrey B.L. & Norton R.A. (2001). The influence of *Escherichia coli*strains from different sources and the age of broiler chickens on the development of cellulitis. *AvianPathology*, 30, 475-479.

Mireles A.J., Kim S.M. & Klassing K.C. (2005). An acute inflammatory response alters bone homeostasis, body composition, and the humoral response of broiler chickens. *Poultry Science*, 84, 553-560.

Nolan L. (2013). Colibacillosis. Diseases of Poultry. 13th Edition. Ames: *Wiley-Blackwell*. Chapter 18. Regione R.M. & Woodward M.J. (2002). Virulence factors of Escherichia coli serotypes associated withaviancoli septicemia. *Reseach in Veterinary Science*, 73, 27-35.

Sanda, M.E., Ezeibe M.C.O. & Anene B.M. (2015). Effects of Vitamins A, C and E and Selenium on immune response of broilers to Newcastle (ND) vaccine. *IOSR Journal of Agriculture and Veterinary Science*, 8(7), 13-15.

Shane, S.M. (2001). Coliform infections are responsible for heavy losses. *World Poultry*, 17(9), 58-59.

Singh S.D., Tiwari, R. & Dhama, K. (2011). Avian colibacillosis, an economically important disease of youngchicks. *World Poultry*, 17(9), 14-20.

Timothy, J. J., Kylie, E. S., Sara, J. J. & Lisa, K.N. (2005). DNA sequence and comparativegenomics of pAPEC- O2-R, an avian pathogenic *Escherichia coli* transmissible R Plasmid antimicrobial agents and chemotherapy. *American Society for Microbiology*, 4681-4688.

Vegad, J.D. & Katiyar, A.K. (2008). A textbook of Veterinary Special Pathology (Infectious Diseases ofLivestock and Poultry), 3rd Reprint. Ch.3. IBDC Print, 293-295.

Vandekerchove, D., De Herdt, P., Laevens, H. & Pasmans, F. (2004). Colibacillosis in caged layer hens: characteristics of the disease and the atieological agent. *Avian Pathology*, 33(2).