Therapeutic Management of Colibacillosis in Broiler chicks

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Abstract
An investigation study was undertaken to identify the etiology associated with mortality of 300 chicks. Postmortem examination of dead birds showed fibrinous hepatitis, pericarditis and airsacculitis as a constant finding. Samples collected from necropsied chicks were subjected to bacteriological isolation studies and confirmed as E.coli by detailed cultural, morphological and biochemical tests. The isolated strains of E.coli were analyzed to determine their susceptibility to antimicrobial agents and found sensitive to Tetracycline and Gentamicin. The chicks were treated with Tetracycline hydrochloride and liver boosters resulting in successful recovery.

Keywords: Colibacillosis, broiler chick, therapeutic management

Introduction
Colibacillosis is one of the commonest infectious disease of farmed poultry, considered as one of the principal causes of morbidity and mortality in young chicks (Stordeur and Manil 2002). Colibacillosis is usually seen in young chicks up to three weeks of age, Enterotoxigenic E.coli strains have been seldomly isolated in chickens suffering from diarrhoea and occasionally in clinically healthy chickens and turkeys (Kabir et al., 2010). Infection is by oral or inhalation routes and via shell membranes, water, fomites with an incubation period of 3-5 days. Morbidity varies but mortality is ranges from 5-20%. Avian pathogenic E.coli (APEC) has been incriminated in a lot of cases of E.coli infection in both broilers and layers. It causes embryo mortality and omphalitis in chicks. Lesions observed are mainly polyserositis with deposition of fibrin in air sacs, pericardium and liver (Kabir et al., 2010). Poor navel healing, mucosal damage due to viral infections and immunosuppression are predisposing factors for Colibacillosis in chickens. In this report, we investigated sporadic mortality associated with E.coli infection in a commercial broiler farm and highlight here in the stepwise protocol used to arrive at diagnosis and treatment.

History and Clinical Observation
An investigation was carried out to find out mortality of 300 chicks among 10000 commercial broiler chicks in age group of 3 weeks in a commercial broiler farm. The birds have been vaccinated against Marek’s disease, Newcastle Disease (ND), Infectious Bronchitis (IB) and Gumboro. Clinical signs observed were lameness, respiratory problems (coughing and sneezing). Some of the birds had pasty vent due to diarrhea (Fig. 1). Severely affected individual birds were inactive and isolated themselves from others with eyes closed in hunched position and drooping head, neck and wings. Postmortem examination showed fibrinous hepatitis, pericarditis and airsacculitis (Fig. 2). Samples collected from necropsied chicks were subjected to bacteriological isolation studies. Nutrient agar, Macokey agar and EMB agar were used as primary culture media for isolation of organisms from samples according to methods described by Quinn et al. (1994). The flock was treated with Tetracycline (5-10mg/kg orally) and multi vitamin (5g/l) was given in drinking water for 5 days.

Fig. 1: Pasty vent due to diarrhea
Fig. 2: Fibrinous hepatitis and pericarditis
Colibacillosis in chicks

Results and Discussion
Bacteriological culture of heart blood swab and affected organs on Nutrient agar revealed gram negative rods, growth in MacConkey agar revealed lactose fermenting pink colonies (Fig. 3) and streaking in EMB agar produced specific metallic sheen colonies (Fig. 4). The isolates were confirmed as E.coli by detailed cultural, morphological and biochemical tests. These results were in agreement with Barrow and Feltham (1993). The isolated strains of E.coli were analyzed to determine their susceptibility to antimicrobial agents. The bacteria were found resistant to Enrofloxacin, Co-trimoxazole, Chloramphenicol, Streptomycin and Amoxicillin and sensitive to Tetracycline and Gentamicin. The chicks were treated with Tetracycline hydrochloride a @ 5 gm/4.5 l of drinking water for 5 days and Hepotabs b @ 15ml/100 birds was given in drinking water for 5 days. Mortality drastically reduced within 48 hours of therapy.

Colibacillosis is major cause of early chick mortality in poultry. The disease affects young and old chickens and mortality is more severe in younger birds (Kabir et al., 2010). In this case, mortality was sporadic and clinical signs were mostly associated with respiratory system, cough, respiratory distress. Postmortem findings were typical of colibacillosis with polyserositis in liver, air sacs and pericardium. These findings have been previously reported to be consistent in colibacillosis in broiler chickens (Kabir et al., 2010). Pathogenicity of E. coli infection has been strongly associated to its virulence factors especially in respiratory system highlighting E. coli division into pathogenic and non-pathogenic strains based on ability to cause disease and difference or combination of virulence factors (Nakamura et al., 1985). The bacteria were found to be resistant to Enrofloxacin, Co-trimoxazole, Chloramphenicol, Streptomycin and Amoxicillin and sensitive to Tetracycline and Gentamicin. In a related study, Amara et al., (1995) reported high antibiotic resistance by E. coli infection to Sulphonamides, Oxytetracycline, Trimethoprim + Sulphamethoxazole and Chloramphenicol, medium susceptibility to Streptomycin, Nalidixic acid, Oxalic acid, Flumequine and Enrofloxacin and high susceptibility to Ampicillin, Gentamicin, Nitrofurans, Colistins and Rifampin Antibiotics.

References