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COLI SEPTICEMIA IN DUCKS (With Two Tables)

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الاصابة بالميكروب القولوني في البط
بخيت سالم

سجلت عدوى بالميكروب القولوني في البط البكينى عمر ١٤ اسبوع وبلغت نسبة الوفيات ١٠% في حين كانت نسبة الاصابة ٦٠% من القطيع في محافظة أسيوط في عام ١٩٩٠. تم عمل الفحص البكتريولوجي على الطيور المريضة والمزبوحة حديثا وتم عزل عترة الميكروب القولوني 078:K80 وباجراء العدوى الصناعية على بط عمر ١٢ اسبوع باستخدام الحقن في العنق وفي القصبة الهوائية باستخدام العترة المعزولة تبين أنها ضاربة. وباجراء اختبار الحساسية العملية على العترة المعزولة وجد أنها تستجيب للتتراكسيلين والكلورتتراسيكلين والفيورازوليدون والكلورامفينيكور. ولذلك تم استخدام الكلورتتراسيكلين في مياه الشرب كاجراء وقائي للتحكم في المرض.

SUMMARY

An outbreak of coli-septicemia with a high morbidity rate of 60% and mortality of about 10% in 14-week-old peking ducks at Assiut Governorate was recorded during 1990. Bacteriological examinations of slaughtered and sick birds revealed the isolation of pathogenic E.coli serotype 073:K80. Experimental infection proved that the isolate was pathogenic to 12-weeks duck by parenteral injection and intratracheal administration.

In vitro sensitivity test revealed that the isolate was sensitive to tetracycline, chlortetracycline, furazolidone and chloramphenicol.

According to the previous results chlortetracycline in water at a rate of 24 mg/bird for 5 successive days was used for controlling the infection.

INTRODUCION

In recent years, the increasing intensive methods have been successfully applied in the production of both growing and breeding ducks. This has resulted in the better

B. SALEM

control of some diseases. *E. coli* septicemia and associated lesions remain an important source of morbidity and mortality in most large duck flocks throughout the world and may be the industry's most costly disease.

The acute infection of coli septicemia had been studied in Egypt. AWAD, *et al.* (1973) were the first who recorded an outbreak of coli infection among ducklings, two strains were isolated O86:K61 (B7) and O119:K69 (B14).

In Assiut, during 1990 about 400 14-week-old Pekin ducks flock showed unthriftiness, depression, pasty diarrhea and septicemia, turbid air sac, pericarditis with total mortality reached about 10% of the flock.

The present study was conducted to isolate and identify the causative agent of the field problem and trial for control of such outbreak with a suitable antibacterial drug.

MATERIAL and METHODS

Isolation and identification of the causative organism:

40 sick and slaughtered ducks 14-week-old were subjected to postmortem examination, followed by culturing from heart blood and bone marrow on nutrient broth, selenite F. broth, tryptose-broth and MacConkey's lactose bile broth, broth tubes were incubated at 37°C for an over-night. Subculturing were then made on blood-agar and MacConkey's -agar, S.S. -agar and Dextrose-starch-agar and plates incubated for 24-48 hours at 37°C. Suspected colonies were subjected to further biochemical and serological identification using anti coli-test sera (anti-o and anti-K (BL) Beringwerke AG, Marburg, Made in Germany), by slide agglutination test.

Experimental infections:

Three groups of ducks 12-week-old each of 17 birds supplied from private duck farm, Assiut province were used as experimental birds. Before inoculation two birds from each group were slaughtered subjected to postmortem as well as bacteriological examinations, which proved that the birds were healthy.

Group (1):

Consisting of 15 birds was inoculated with 24 hr. broth culture of *E. coli* isolate each receiving 20×10^7 organisms via intratracheal route.

Group (2):

15 chicks were infected with the same dose of organism as in group (1) by parenteral route.

E.COLI IN DUCKS

Group (3):

Was inoculated with a sterile broth and left as control. All infected and control ducks were kept under observations for 4 weeks. Clinical signs, post mortem pictures were recorded and trial for reisolations of inoculated organism were conducted.

Sensitivity of the isolate to antimicrobial agents:

The paper disc technique was carried out after FINEGOLD and BARON (1986) using E.coli isolate and antibiotic discs produced by Oxdoid, Basingstoke, Hampshire, England. The discs included Tetracycline (30 ug), Chlortetracycline (30 ug), Furazolidone (50 ug), Chloramphenicol (30 ug), compound sulphonamide (300 ug), Neomycine (30 ug), Spectinomycin (10 ug), Penicillin G (10 ug), Ampicillin (10 ug), Flumequine (30 ug), Colistin sulphate (10 ug), Cephalexin (30 ug), Erythromycin (15 ug), Cosumix plus (50 mg), Doxycyclin hydrochloride (30 ug), Lincomycine (2 ug), and Streptomycin (10 ug), interpretation of the results was recorded according to the recommendation of CASTLE and ELSTUB (1971).

Drugs:

Chlortetracycline, 20% (El Nasr Pharmaceutical chemicals Company) was used in controlling the field infection.

RESULTS

The naturally infected ducks showed a drop in food consumption, some birds appearing listless, unthriftiness ruffled feathers and the duck have diarrhea with pasty or dirty feather around vent. While post mortem examination of dead birds revealed air sacculitis, pericarditis and perihepatitis. On bacteriological examinations of affected ducks E.coli was the only isolated organism.

Results of bacteriological examination revealed convex, circular, smooth, gray colonies on blood agar, and brick red colonies on MacConkey's agar. The results of biochemical activities of the isolate revealed that isolate fermented glucose, fructose, mannitol, maltose, rhamnose, sorbitol, sucrose, arabinose, glycerol and lactose, did not ferment inositol and dextrin. Furthermore, the isolate produced positive reaction with gelatin, H₂S, urea and methyl red. The isolate produced negative results with voges proskauer. Serological identification proved that the isolate was E.coli serotype O78:K80.

Results of pathogenicity test and in vitro sensitivity test are shown in table (1) and (2) respectively.

B. SALEM

DISCUSSION

Colisepticemia of growing ducks characterized by subacute fibrinopurulent serositis involving air sacs and pericardium have been reported by GUO, *et al.* (1983). During 1990, in this work an acute infection characterized by septicemia, turbidity of air sac, pericarditis and perihepatitis was observed in growing ducks at Assiut Duck Farm, Egypt.

The result of clinical signs of diseased ducks and post mortem lesions described by the author in this study are in agreement with the findings of KARMY, *et al.* (1987) and GUO, *et al.* (1983) who found that the most characteristic lesions were perihepatitis and pericarditis.

Bacteriological examinations of 40 ducks showed that one strain of E.coli serotype 078:K80 was recorded. The same serotype was previously isolated by KARMY, *et al.* (1987), from broilers and ducks with respiratory symptoms and air sacculitis. While AWAD, *et al.* (1973); IBRAHIM (1977) who studied the problem in Egypt did not isolate the same serotype.

Experimental infections in ducks proved that the isolate was pathogenic with mortality rates varied from 20 to 40%. The clinical signs and P.M. pictures recorded in this study were almost more severe than that described in field condition. Our results are similar to findings of IBRAHIM (1977) who found that ducklings died within 48 hours post inoculation showed typical septicemia with congestion using isolated strains from ducklings. E.coli 078 was not only virulent to ducks but also to chicks PRUKNER (1986) and turkey CHEVILLE and ARP (1978).

The sensitivity test indicated that the isolate was highly sensitive to Tetracycline, Chlortetracycline, Furazolidone and Chloramphenicol, less sensitive to Neomycin and was non sensitive to Penicillin and Ampicillin. In contrast KARMY, *et al.* (1987) found Flumequine was the most active antimicrobial agent in vitro. While IBRAHIM (1977) demonstrated that all the isolated strains were highly sensitive to Chloramphenicol, Nitrofurantion and Sulphamethoxazole, moderate degree of sensitivity were shown to Tetracycline and Ampicillin. ERGANIS, *et al.* (1989) recorded that E.coli strain isolated from hens were highly sensitive to Gentamicin and Nalidixic acid.

Trial for control the natural infection was carried out using Chlortetracycline (24 mg/bird) for 5 successive days in drinking water of the affected flocks in addition to general hygienic precautions. The drug was effective in controlling th condition and stop the deaths, while GOREN, *et al.* (1988) used Spectinomycin and Lincomycin with success for controlling E.coli infection.

E.COLI IN DUCKS

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B. SALEM

Table 1.: Results of experimental infection of healthy ducks with E.coli isolate by different routes.

Group No.	No. of infected ducks	Route of inoculation *	Daily deaths post infection							Total Mortality %		
			4	5	6	7	8	9	10		30	
1	15	parenteral	2	-	2	2	-	-	-	-	6	40%
2	15	intr-tracheal	-	-	1	1	1	-	-	-	3	20%
3	15	control **	-	-	-	-	-	-	-	-	-	-

* 20×10^7 organisms / bird. ** Inoculated sterile broth. of 24 hours broth culture of E.coli isolate.

Table 2.: Results of in vitro sensitivity test.

Antimicrobial agents	Sensitivity of E.coli isolate
Tetracycline.	+++
Chlortetracycline.	+++
Furazolidone.	+++
Chloramphenicol.	+++
Compound Sulphonamide.	++
Neomycin.	++
Spectinomycin.	++
Penicillin G.	-
Ampicillin.	-
Flumequine.	++
Colistin Sulphate.	++
Cephalexin.	+
Erythromycin.	+
Cosmix plus.	+
Doxycyclin hydrochloride.	+
Lincomycin.	++
Streptomycin.	+

+++ = sensitive. ++ = moderate. + = slight. - = negative.