

قسم : طب الحيوان وأمراض الدواجن .
كلية : الطب البيطري - جامعة أسيوط .
رئيس القسم : أ. د. / إبراهيم سحن سكر .

بعض المشاهدات على الإصابة بالميكروب القولوني

في الدجاج البياض

عوض عبد الحافظ ، مصطفى عبد المطلب

ظهرت أعراض المرض عام ١٩٨٢ باحدى مزارع الوادى الجديد على
قطيع دجاج من سلالة الهبرد .

وكانت نسبة النفوق ٤٪ في الدجاج عمر ستة شهور بالفحص
البكتريولوجي للدجاج النافق ، تم عزل ١٤ عترة من الميكروب E. Coli
تنتمي الى المجموعة السيرولوجية رقم (٣) أثبتت العدوى التجريبية ضراوة
الميكروب لجميع أعمار الدجاج .

استجابت العترات المعزولة تجريبيا لتأثير النيتروفيранتين والكلور
مفينكول والتنيوميسين .

اعطي مركب فيور القادون والكلورامفينكول في ماء الشرب لمدة ٧ أيام
لمقاومة المرض .

Dept. of Animal Medicine & Poultry Diseases,
Faculty of Vet. Med., Assiut University,
Head of Dept. Prof. Dr. I.H. Sokkar.

SOME OBSERVATIONS ON COLISEPTICAEMIA OF LAYING CHICKENS (With 5 Tables)

By
A.A. IBRAHIM and M.A. SHAHATA
(Received at 22/11/1982)

SUMMARY

An acute infection characterized by septicaemia and daily mortality of about 4% six-months-old, Hubbard chickens was recorded during "1982" at El-Wadi El-Gadid, Poultry Farm. Bacteriological examinations of dead birds revealed the recovery of "14" E.coli isolates belonging to "3" serotypes. Experimental infections proved that the isolates were pathogenic to different ages of chickens.

The isolated strains were sensitive to Nitrofurantion, Chloramphenicol and Neomycin. According to the previous result Furaltadone and Chloramphenicol were used in drinking water for 7 days to control the infection.

INTRODUCTION

Colisepticaemia of chickens appeared to be one of the most common diseases that affect poultry industry allover the world. Infections by different E.coli strains were known to be associated with a number of disease conditions in chickens "Colisepticaemia, Salpingitis, Omphalitis, Coli-granuloma and Chronic respiratory disease" [YADAV & MALIK (1971)].

The problem of Colisepticaemia had been studied in Egypt by AWAAD (1972) who isolated 25 strains of E.coli out of 290 diseased chickens.

During the year 1982 about 9000 laying chickens "six-months-old, Hubbard-breed" at El-Wadi El-Gadid, suffered from acute infection characterized by septicaemia, low egg production and daily mortality of about 4%.

The present work was planned to solve the problem according to the following items:

- Isolation & identification of the causative agent which may be responsible for the condition.
- Trial to reproduce the disease experimentally in susceptible chickens using the possible isolates.
- Testing the sensitivity of the isolates to different chemotherapeutic agents.
- Field trial to control the losses in this farm.

MATERIAL and METHODS

Isolation & identification of causative organisms:

126 freshly dead, Hubbard chickens of six-months-old were subjected to post-mortem examination, followed by culturing from heart-blood, liver, spleen, oviduct and bonemarrow on nutrient-broth, Selenite F. broth and Tryptose-broth, incubated at 37C for an over-night. Subculturing

were then made on blood-agar, MacConkey-agar, S.S.-agar and Dextrose-starch-agar plates, incubated for 24-48 hours at 37°C. Suspected colonies were subjected to further biochemical and serological identification.

Experimental infections:

Three groups of chickens (Fayomi), one-day-old, six-weeks-old and six-months-old, each of 45 birds supplied from Buni-Mur Poultry Farm, Assiut Province were used in this experiment.

5 birds of each group were taken randomly slaughtered, subjected to post-mortem and bacteriological examinations, which proved that the birds were healthy. Chickens of each group were divided into "4" subgroups, of which the first three were inoculated with 24-hours-broth-cultures of different *E.coli* strains "20 x 10 organisms/bird" via the oral route, while the remaining birds of each group were similarly inoculated with sterile-broth. The infected chickens were kept under observations for 4-weeks. Clinical signs, p.m. pictures were recorded and trial for reisolations of inoculated organism were conducted.

Sensitivity test:

The test was carried-out after KOLMER, *et al.* (1951) using the paper disc-technique. Mono-discs produced by Oxoid-Laboratories includes: Neomycin (30 ug.), Ampicillin (10 ug.), Oxytetracycline (30 ug.), Erythromycin (15 ug.), Streptomycin (10 ug.), Penicillin G. (10 units), Chloramphenicol (30 ug.), Sulphamethoxazole (25 ug.) and Nitrofurantion (300 ug.) were used in this study.

Drugs:

Chloramphenicol (20%) and Furaltadone (20%) produced by Ceva Company, were used in controlling the field infection.

RESULTS

The naturally infected chickens showed lowered appetite, cyanosis of comb, wattles and drop of egg production, while P.M. examinations of dead birds revealed pericarditis, air-sacculitis, congested liver, splenomegaly, oophoritis and salpingitis. On bacteriological examinations of affected chickens *E.coli* was the only isolated organism. Identification of suspected isolates were carried out after EDWARDS and EWING (1972).

Experimentally infected birds showed depression, loss of appetite, congested comb, wattles and diarrhoea. The dead baby-chicks revealed unabsorbed yolk, distended gall-bladder, while congested liver, spleen, air-sacculitis, pericarditis were observed in all ages of infected chickens. Salpingitis and oophoritis were recorded among dead adult birds.

Results of pathogenicity tests in one-day-old, six weeks and six-months-old chickens were tabulated in Tables II, III and IV respectively.

DISCUSSION

Colisepticaemia of laying flocks is not so common as in broiler chickens (HARRY, 1964). During 1982, an acute infection characterized by septicaemia and low egg-production was observed in nine-thousand laying chickens at El-Wadi El-Gadid, Poultry Farm, Egypt.

The clinical signs of diseased birds and post-mortem lesions described by the authors in the results of this study were in agreement with the findings of NAGI & KHANNA (1967) and

COLISEPTICAEMIA OF LAYING CHICKENS

BISGARD & DAM (1980) who found that the diseased chickens showed cyanosis of comb and wattles in addition to general signs while the most characteristic lesions were air-sacculitis, pericarditis, congested liver and salpingitis.

Concerning the bacteriological examinations of dead birds were identified to be belonging to "3" *E.coli* serotypes. *E.coli* serogroups 0124:K72 (B17) and 0127:K70 (B15) detected by the authors were previously isolated by AWAAD (1972) and YOUSEF, *et al.* (1982) respectively from cases of chickens infected with Colisepticaemia.

Experimental infections in different ages of chickens proved that all the isolates were pathogenic, with mortality rates varied from 10 to 40%. The clinical signs and P.M. pictures recorded by the authors in the present investigation were almost as those described in the field conditions but in more severe form. Our results agreed with the findings of GROSS (1957) who found the same lesions and also with those of AFNAN (1968) who reported that the *E.coli* 0127 was pathogenic to one-day-old-chicks.

The sensitivity test indicated that the isolates were highly sensitive to Chloramphenicol and Nitrofurantion, less sensitive to Neomycin, Oxytetracycline and Erythromycin and almost non-sensitive to Ampicillin, Streptomycin, Penicillin G. and Sulphamethoxazole. Similar results were recorded by AWAAD (1972) BUTURA, *et al.* (1973), FARIS (1979) and SHARMA, *et al.* (1981) who concluded that the majority of *E.coli* strains isolated from fowls were sensitive to both Chloramphenicol and members of Nitrofurans groups.

Trial for control the natural infection was carried-out using Chloramphenicol "25 mg./bird" and Furaltadone "25 mg./bird" for 7-days in the drinking water of the affected flocks in addition to general hygienic precautions. The drugs were effective in controlling the condition and stop the deaths, the same results were previously reported by GROSS (1961) and HERBERT, *et al.* (1969).

REFERENCES

- Afnan, M. (1968): A new pathogenic serotype of *E.coli* 088:K(B) H10. *Vet. Rec.* 82, 171.
- Awaad, M. (1972): Studies on Colisepticaemia in chicks. Thesis, Cairo Univ., Fac. of Vet. Med.
- Bisgaard, M. & Dam, A. (1980): Salpingitis in poultry. I. Prevalence, bacteriology and possible pathogenic in broilers. *Nordisk Veterinaermedicin*, 32, (9), 361-368.
- Butura, I.; Cernea, I. and Sahleam, C.M. (1973): Epidemiological and experimental studies on *E.coli* infections of poultry. *Medicina Veterinaria*, 27, 313-320.
- Edwards, P.R. & Ewing, H.W. (1972): Identification of Enterobacteriaceae. Burgess Publ. Co. Minneapolis, Minnesota.
- Faris, M.T.De. (1979): Serological typing of *E.coli* strains isolated from poultry in Brazil. *Desiderio Finamar*, 6, 65-71.
- Gross, W.B. (1957): Pathological changes of an *E.coli* infection in chickens and turkeys. *Amer. J. Vet. Res.* 18, 724-730.
- Gross, W.B. (1961): The effect of Chlortetracycline, Erythromycin and Nitrofurans as treatment for experimental air-sac disease. *Poult. Sci.* 40, 833-841.
- Harry, E.G. (1964): A study of 119 outbreaks of Colisepticaemia in broiler flocks. *Vet. Rec.* 76, 443-449.
- Herbert, T.J. & Chang, T.S. (1969): The effect of furazolidone and other drugs on artificially induced *E.coli* infections in chickens. *Poult. Sci.*, 48, 2063-2069.

- Kolmer, J.A.; Spaulding, E.H. & Robinson, H.W. (1951): Approved Laboratory technique 5th Ed. Appleton Century-Crofts, Inc., New-York.
- Nagi, M.S. & Khanna, P.N. (1967): A cholera-like disease in chicks due to haemolytic E.coli Ind. Vet. J. 44, 629.
- Sharma, D.K.; Sambyol, D.S. and Baxi, K.K. (1981): Drug susceptibility of E.coli from domestic fowl. Zent. für. Vet. Med. 28 B, (4), 333-335.
- Yousef, I.Y.; Awaad, M.H. and Hamouda, A. (1982): Outbreak of Coli-septicaemia in chicks caused by E.coli 0124. Zagazig Vet. Med. J. "In press".

Table (I)
Results of E.coli serotyping were illustrated

Sr. No.	Isolated Serotypes	Frequency
1	O 44 : K 74 (L)	6
2	O 124 : K 72 (B17)	4
3	O 127 : K 70 (B15)	4
Total isolates		14

Table (II)
Experimental oral infection in one-day-old-chicks

Group No.	Inoculated Serotype	No. of birds	Daily deaths								Frequency	
			4	5	6	7	8	9	10	30	Total	%
1	O 44 : K 74 (L)	10	1		1	1					3	30
2	O 124 : K 72 (B17)	10			1	1	1		1		4	40
3	O 127 : K 70 (B15)	10		1	1	1		1			4	40
4	Sterile-broth	10									-	-

COLISEPTICAEMIA OF LAYING CHICKENS

Table (III)
Experimental oral infection in 6-weeks-old-chicks

Group No.	Inoculated Serotype	No. of birds	Daily deaths							Frequency	
			6	7	8	9	10	20	30	Total	%
1	O 44 : K 74 (L)	10	1		1					2	20
2	O 124 : K 72 (B17)	10		1		1				2	20
3	O 127 : K 70 (B15)	10		1	2	1				4	40
4	Sterile-broth	10								-	-

Table (IV)
Experimental oral infection in six-months-old-chickens

Group No.	Inoculated Serotype	No. of birds	Daily deaths							Frequency	
			6	7	8	9	10	20	30	Total	%
1	O 44 : K 74 (L)	10					1			1	10
2	O 124 : K 72 (B17)	10				1		1		2	20
3	O 127 : K 70 (B15)	10		1	1		1			3	30
4	Sterile-broth	10								-	-

Table (V)
Results of sensitivity test

Anti-microbial agents	Tested E.coli Strains		
	O44:K74(L)	O124:K72(B17)	O127:K70(B15)
Chloramphenicol	+++	+++	+++
Ampicillin	-	+	-
Oxytetracycline	+	++	+
Streptomycin	+	+	+
Erythromycin	+	+	+
Nitrofurantion	+++	+++	+++
Neomycin	++	++	++
Penicillin G.	-	-	-
Sulphamethoxazole	-	+	-

