Mansoura Veterinary Medical Journal

A SURVEY ON BACTERIAL DISEASES CAUSING MORTALITIES IN THE FIRST WEEK OF BROILER,S CHICKS LIFE

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ABSTRACT

The present study was conducted to investigate bacterial diseases causing mortality in the first week of broiler's chick life on broiler poultry farms in Dakahlia Governorate. A total of 240 samples (105moribund chicks and 135 dead chicks) resembles different breeds (Avian,Cobb, Hubbard, Baladi and Saso) , different ages(1-7d.), different housing capacity (5.000:20.000) as well as different farm districts in Dakahlia Governorate were collected during the experiment period (2012-2015). The isolated bacteria from these samples were identified by culture character , biochemical tests and serological identification. The predominant isolated bacteria were Salmonella (75%) identified as 3 isolates of Salmonella Enteritidis one isolate of Salmonella Typhimurium , one isolate of Salmonella Kentucky one isolate of Salmonella Tamale and E. coli isolates (25%) identified as two isolate of E. coli (O)serogrroup. The isolated strains of Salmonella and E. coli were inoculated into susceptible one day old chicks by two routes (oral and I/p) route. The clinical signs, PM lesions, histopathological lesions and performance profile of each subgroup revealed that chick mortality were recorded with clinical signs and septicemic pictures of most inoculated groups except control group. Mortality rate was higher in (I/p) inoculation than (oral) inoculation . Histopathological lesions proved signs of severe congestion in liver, lung, and other tissue samples. Growth performance parameters proved that there were significantly lower feed intakes, mean body weight gain all over the experimentation period (four weeks) in all groups in comparison with control group.

INTRODUCTION

Health condition of the day-old chicks is very important for the poultry production chain success. In the broiler production, the production of healthy day-old chicks determines the economic efficiency of the production process. Broiler production is very important in the Egypt economy. Mortality in day-old broiler chicks leads to loss in income to broiler farms and to the hatcheries.

In the first week of life, which presently constitutes 16% of the life span of the broiler **(Gyles, 1989)**. Newly hatched chicks may be attacked by harmless bacteria during the first week post-hatch due to the lack of gastrointestinal flora which makes them highly susceptible to infection , so the first few days of age resembles the most critical period in the life of broiler chick. **(Charlton (1996) and Henerson et al (1999)**

Bacterial infections are first indicated by early deaths within the first week of chick's life.

The daily increase in the weight of broiler chicks is more important factor that shorten the fattening cycle. At present, the birds consumed a little and given more weights. To achieve this, the first week of a chick's life is very important because it leads to optimum growth . Chick mortalities during the first week Lead to significant economic losses to the poultry industry and problem of great concern. Early chick mortality is the result of many factors, management, nutrition, disease control, etc., it is difficult to control this problem **(Kedar, 2008)**

Different types of bacterial agents such as E.coli ; salmonella ; Pseudomonas ; Proteus ; Kelebsiella ; Staphylococcus ; Streptococcus ; ….etc are attributed for early chick mortality **(Venkanagouda et al., 1996) and Walker et al (2002),** It has been found that the mortality rate ranged between 3 % to 28**%(Terregino et al., 2000)** In addition to high chick mortality, there is a decrease in the growth rate of the survivors **(Otaki 1995) and (Dhillon et al., 1999)** and the culling rate in chicks were about5% **(O' Brien 1988)**

In Egypt, Escherichia coli, Salmonella spp., Klebsiella pneumonia, Proteus mirabilis and Pseudomonas aeruginosa are isolated as the most bacterial causes responsible for high chick mortality in different broiler farms **(Khelfa et al 2015)**

MATERIAL AND METHODS

A total of 240 baby chicks were collected within the first week after hatching from twenty five broiler , Saso and Baladi flocks representing about 250.000 birds of different districts at Dakahlea province during investigation period. 105 chicks were in a diseased moribund conditions , while the remaining 135 chicks were freshly dead. The collected birds were subjected to clinical and/or post-mortem examination in Department of Poultry and Rabbit Diseases , Faculty of Vet. Medicine , Mansoura University.

Under aseptic conditions , bacterial loopfulls were directly taken from yolk sacs , livers , gall bladders ,lungs ,spleens and heart blood . These loopfulls were cultivated into Nutrient and selsnite-F-broth as enriched media ; aerobically cultivated at 37 ^{o}C for 24 hours ; then subcultured into Macconkey agar and S.S. agar . Inoculated plates were incubated at 37 ^{o}C for 24 hours , Different colonies were picked up from selective media ,subcultured into semi solid agar media and preserved in refrigerator until used.Films were prepared from the suspected colonies , stains with Gram's stain and examined microscopically for morphological characters as described by **CruickShank, et al. (1975)** . colonies showing morphological characters of Salmonella and E.coli were preserved on semisolid agar for further identification. Suspected isolates were biochemically identified after the scheme stated by **Feingold and Martin (1982)** .Cultures that biochemically suspected to be **Salmonella** or **E.coli** were transferred to nutrient agar slant , the slant was inoculated over the entire surface to obtain maximum growth, incubated for 24 hr. at 37 ^{o}C and used for serological study according to **Kauffman-white scheme (1972).**

Pathogenicity test:

A- Titration of inoculum :

Ten fold serial dilutions of the original broth culture after 24 hr. incubation at 37^{o}C was

carried out for determination of the infective dose of each organism The tested bacterial strains were used in the following dose/ chick **(Table 2)** matching MacFerland stander to contain1 x 10^8 c.f.u **(Ewers et al 2008).**

B- Experimental design:

A total of **(475)** day old male layer chicks **(Hyline breed)** were used .**13** chicks were taken randomly, sacrificed and examined bacteriologically to confirm their freedom from **E.coli** and **Salmonella** . The remaining **(462** chicks) chicks were divided into **11** main groups, each containing(**42** chicks) , each group subdivided into three replicates(**14** chicks in each), the **eleventh** group remain as **control group (table 2)**.

Daily observation of all groups including; the clinical signs and/or mortality, postmortem lesions, food consumption and body weight were recorded.

RESULT

In this study salmonella and E.coli were isolated from farms in different districts in dakahlea governorate. The clinical signs at examined chicks were in the form of pasted vent , whitish diarrhea,resp-iratory manifestation , poor growth rate and unthriftness **,**the p.m lesions were discoloured unabsorbed yolk sac , congestion of the internal organs and air sacculitis**,** cecal core and nodules on the heart. **Table (3)**

Serological identification revealed three isolates of Salmonella Enteritidis , one isolate of Salmonella Typhimurium , one isolate of Salmonella Kentucky and one isolate of Salmonella Tamale also two isolate of E.coli (O0 serogroup

The control non –chalenged chicks showed neither clinical signs nor post mortem lesions and mortalities.

E. coli chalenged chicks showed clinical signs in the form of pasted vent , gasping , poor growth rate and unthriftness , on other hand Salmonella chalenged chicks revealed clinical signs in the form of diarrhea , huddle under heat source , sleepy appearance and poor growth rate Except chicks inoculated with S.tamale which showed no marked clinical signs except poor growth rate .

There werediscoloured unabsorbed yolk sac , congestion of the internal organs (liver , lung and spleen) and air sacculitis in the groups challenged with E. coli. on other hand there were congestion of the internal organs (liver , lung and spleen) , necrosis in liver and spleen , cheesy cecal core and nodules on heart , liver and proventriculous in the groups challenged with Salmonella spp.

There were were mortaliities in all inoculated groups except the group inoculated with S.tamale by oral route.The pathogenicity test revealed that I/P inoculation leads to high mortalities In comparison with oral inoculation **(table3)** .

Re-isolation of the challenged organism :

Six birds from each group were randomly selected , sacrificed at 7th ,14th,21th,28th post challenge and the liver, heart, spleen, and intestine were collected for reisolation.The higher reisolation rate were in the first week post inoculation, liver and caecum gave the highest reisolatin rate . **(table 4,5)**.

* : significant with control group

The highest values of mean body weight gain (B.WT.G.) were observed in control non-challenged group in comparison with other groups **(table 7)**

* : significant with control group

The lowest values of feed conversion rate (A.F.C.R) were observed in control non-challenged group in comparison with other groups **(table 8).**

- **Histopathology :**

Tissue samples were taken from each group at 7th ,14th,21th,28th post chalenge from liver, spleen, lung, kidney and intestine of 6 sacrificed bird from each group immediately after cervical dislocation. all the specimens were fixed in 10% formol saline for processing. Sections of 5 µm thick were routinely stained with hematoxyline and eosin and examined microscopically for histopathological lesions. **Bancroft and Stevens (1996)**

Growth performance parameters :

The highest values of average feed intake (A.F.I) were observed in control non-challenged group in comparison with other groups **(table 6).**

Table (1) Kind of samples obtained from different districts in Dakahlea governorate.

Districts	Samples		Total
	moribund Chicks	Dead chicks	
Belqas	30	35	65
Elmaasara	15	25	40
Elsatamooni	10	20	30
Kalabsho	15	10	25
Nabarooh	10	5	15
sherbeen	15	20	35
Talkha	10	20	30
Total	**105**	**135**	**240**

Table (2) the inoculum dose of tested bacterial strains.

Group no.	Number of chicks	Bacterial strain	Inoculum dose	Route of inoculation
1	42	**E.coli**	0.5 ml	oral
2	42	**E.coli**	0.2 ml	I/p
3	42	**S.enteritidis**	0.5 ml	oral
4	42	**S.enteritidis**	0.2 ml	I/p
5	42	**S.typhimurium**	0.5 ml	oral
6	42	**S.typhimurium**	0.2 ml	I/p
7	42	**S.kentuky**	0.5 ml	Oral
8	42	**S.kentuky**	0.2 ml	I/p
9	42	**, S. tamale**	0.5 ml	Oral
10	42	**, S. tamale**	0.2 ml	I/p
11	42	**Control negative group**		

Table (3) Strains of Bacteria isolated from different districts in Dakahlea governorate.

Districts	Live	Dead	Total	C.S	P.M	(+) Samples	%	Isolated bact. strains
Belqas	30	35	65	pasted vent , whitish diarrhea, respiratory manifestation , poor growth rate and unthriftness.	discoloured unabsorbed yolk sac , congestion of the internal organs and air sacculitis, cecal core and nodules on the heart.	25	38.5%	**Salmonella & E.coli**
Elmaasara	15	25	40			11	27.5%	**Salmonella**
Elsatamooni	10	20	30			5	16.7%	**Salmonella**
Kalabsho	15	10	25			0	0%	**-**
Nabarooh	10	5	15			1	6.7%	**Salmonella**
sherbeen	15	20	35			5	14.3%	**E.coli**
Talkha	10	20	30			5	16.7%	**Salmonella**
Total	105	135	240			76	31.7%	

Table (4) Serological identification of Salmonella isolates.

Identified strain	Group	Antigenic structure		No. of isolates	%
		O	H		
S. enteritidis	D1	1,9,12	g,m	3	**50**
S. typhimurium	B	1,4,5,12	i:1,2	1	**16.7**
S. Kentucky	C3	8,20	i: z6	1	**16.7**
S. tamale	C3	8,20	Z29:e,n,z15	1	**16.7**
Total				6	**100**

Table (5) Serological identification of E.coli isolates.

Organism	Antigenic formula	Polyvalent sera	Monovalent sera						
E.coli	Poly 1 O:1	Polyvalent 1	O1	O26	O86a	O111	O119	O127a	O128

Table (3): mortality rates in different groups

Group	Bacterial strain	Inoculation route	Mortality (%)				Total mortality (%)
			Age(weeks)				
			1st.week	2nd.week	3rd.week	4th.week	
1	E.coli	Oral	2 (4.8%)	0(0.0)%	0(0.0%)	0(0.0%)	2/42(4.8%)
2	E.coli	I/P	2 (4.8%)	2 (4.8%)	0(0.0%)	0(0.0%)	4/42(9.5%)
3	S.ent.	Oral	3 (7.1%)	0(0.0%)	0(0.0%)	0(0.0%)	3/42(7.1%)
4	S.ent.	I/P	5(11.9%)	0(0.0%)	0(0.0%)	0(0.0%)	5/42(11.9%)
5	S.typh.	Oral	2 (4.8%)	2 (4.8%)	0(0.0%)	0(0.0%)	4/42(9.5%)
6	S.typh.	I/P	4 (9.5%)	1 (2.4%)	0(0.0%)	0(0.0%)	5/42(11.9%)
7	S.kent.	Oral	4 (7.1%)	0 (0.0%)	0(0.0%)	0(0.0%)	4/42(7.1%)
8	S.kent.	I/P	3 (9.1%)	0 (0.0%)	0(0.0%)	0(0.0%)	4/42(9.5%)
9	S. tam.	Oral	0 (0.0)%	0 (0.0%)	0(0.0%)	0(0.0%)	0 (0%)
10	S. tam.	I/P	2 (4.8%)	0 (0.0%)	0(0.0%)	0(0.0%)	2/42(4.8%)
11	Control non chalenged		0 (0.0)%	0 (0.0%)	0(0.0%)	0(0.0%)	0(0.0%)

Table (4) Reisolation of inoculated bacteria from internal organs of orally inoculated groups

Bacterial strain	Organ culture	Positive samples%				Total %
		Age(Day)				
		1st. week	2nd. week	3rd. week	4th. week	
E.coli	Liver	6/6(100%)	5/6(83.3%)	4/6(66.7%)	3/6(50%)	18/24/6(75%)
	spleen	3/6(50%)	3/6(50%)	2/6(33.3%)	1/6(16.7%)	9/24(37.5%)
	caecum	5/6(83.3%)	4/6(66.7%)	4/6(66.7%)	3/6(50%)	16/24(66.7%)
S.ent.	Liver	5/6(83.3%)	4/6(66.7%)	4/6(66.7%)	3/6(50%)	16/24(66.7%)
	spleen	4/6(66.7%)	3/6(50%)	2/6(33.3%)	1/6(16.7%)	10/24(41.7%)
	caecum	6/6(100%)	5/6(83.3%)	4/6(66.7%)	4/6(66.7%)	19/24(79.2%)
S.typh.	Liver	6/6(83.3%)	4/6(66.7%)	4/6(66.7%)	3/6(50%)	17/24(70.8%)
	spleen	4/6(83.3%)	3/6(50%)	1/6(50%)	1/6(16.7%)	9/24(37.5%)
	caecum	5/6(83.3%)	4/6(66.7%)	4/6(66.7%)	3/6(50%)	16/24(66.7%)
S.kent.	Liver	5/6(83.3%)	4/6(66.7%)	4/6(66.7%)	3/6(50%)	16/24(66.7%)
	spleen	4/6(83.3%)	2/6(66.7%)	2/6(66.7%)	2/6(50%)	10/24(41.7%)
	caecum	5/6(83.3%)	4/6(66.7%)	4/6(66.7%)	3/6(50%)	16/24(66.7%)
S.tam.	Liver	4/6(66.7%)	4/6(66.7%)	3/6(50%)	2/6(33.3%)	13/24(54.2%)
	spleen	2/6(33.3%)	1/6(16.7%)	1/6(50%)	0/6(0%)	4/24(16.7%)
	Caecum	5/6(83.3%)	4/6(66.3%)	3/6(50%)	2/6(33.3%)	14/24(58.3%)

Table (5) Reisolation of inoculated bacteria from internal organs of I/P inoculated groups

Bacterial strain	Organ culture	Positive samples%				Total %
		Age(Day)				
		1st. week	2nd. week	3rd. week	4th. week	
E.coli	Liver	6/6(83.3%)	4/6(66.7%)	4/6(66.7%)	3/6(50%)	17/24(70.8%)
	spleen	4/6(83.3%)	3/6(50%)	3/6(50%)	1/6(16.7%)	11/24(45.8%)
	caecum	5/6(83.3%)	4/6(66.7%)	4/6(66.7%)	3/6(50%)	16/24(66.7%)
S.ent.	Liver	6/6(100%)	5/6(83.3%)	5/6(83.3%)	4/6(66.7%)	20/24(83.3%)
	spleen	5/6(83.3%)	5/6(83.3%)	4/6(66.7%)	4/6(66.7%)	18/24(75%)
	caecum	6/6(100%)	6/6(100%)	6/6(100%)	6/6(100%)	24/24(100%)
S.typh.	Liver	5/6(83.3%)	4/6(66.7%)	3/6(50%)	3/6(50%)	15/24(62.5%)
	spleen	5/6(83.3%)	4/6(66.7%)	4/6(50%)	3/6(50%)	16/24(66.7%)
	caecum	5/6(83.3%)	5/6(83.3%)	5/6(66.7%)	4/6(50%)	19/24(79.2%)
S.kent.	Liver	5/6(83.3%)	4/6(66.7%)	4/6(66.7%)	3/6(50%)	16/24/6(83.3%)
	Spleen	3/6(50%)	3/6(50%)	2/6(33.3%)	1/6(16.7%)	9/24(37.5%)
	caecum	5/6(83.3%)	4/6(66.7%)	4/6(66.7%)	3/6(50%)	16/24(66.7%)
S.tam.	Liver	4/6(66.7%)	4/6(66.7%)	3/6(50%)	2/6(33.3%)	13/24(54.2%)
	spleen	2/6(33.3%)	1/6(16.7%)	1/6(50%)	0/6(0%)	4/24(16.7%)
	caecum	5/6(83.3%)	4/6(66.3%)	4/6(66.7%)	3/6(50%)	16/24(83.3%)

No Bacterial strains were isolated during the trial from control non challenged group.

Table (6) The Average Feed intake (A.F.I)

Average feed_intake (gm)	1st. Week	2nd. Week	3rd. Week	4th. week
Control non- chalenged	124.41 ± 2.18^{abc}	220.14 ± 4.79^{de}	332.17 ± 12.09^{f}	436.67 ± 1.30
E.coli (oral)	$104.89 \pm 2.94^{*abc}$	$195.38 \pm 3.08^{*de}$	$296.77 \pm 11.43^{*f}$	$346.78 \pm 10.84^{*}$
E.coli (I/P)	$111.31 \pm 6.73^{*abc}$	$186.56 \pm 3.41^{*de}$	$290.63 \pm 14.48^{*}$	$352.93 \pm 14.92^{*}$
S.Entertedes(oral)	$114.23 \pm 1.67^{*abc}$	$203.18 \pm 5.12^{*d}$	$267.22 \pm 46.69^{*}$	$395.00 \pm 39.17^{*}$
S.Entertedes(I/P)	116.72 ± 7.62^{abc}	$203.56 \pm 9.56^{*de}$	$247.27 \pm 14.36^{*f}$	$405.44 \pm 9.16^{*}$
S.Typhymurium(oral)	$116.44 \pm 5.37^{*abc}$	$203.00 \pm 5.22^{*de}$	306.92 ± 10.11^{f}	$395.24 \pm 8.25^{*}$
S.Typhymurium(I/P)	$110.47 \pm 6.80^{*abc}$	$202.64 \pm 8.74^{*de}$	$308.47 \pm 9.88_{f}$	$380.16 \pm 21.61^{*}$
S.Kentuky(oral)	117.48 ± 1.70^{abc}	$210.68 \pm 5.03^{*de}$	301.57 ± 25.70^{f}	$400.00 \pm 11.67^{*}$
S.Kentuky(I/P)	$114.93 \pm 3.37^{*abc}$	$212.76 \pm 3.19^{*de}$	$293.36 \pm 17.84^{*f}$	$389.04 \pm 11.23^{*}$
S.Tamale(oral)	117.31 ± 4.98^{abc}	$206.81 \pm 5.90^{*de}$	311.57 ± 11.53^{f}	$422.45 \pm 13.65^{*}$
S.Tamale(I/P)	$113.74 \pm 1.98^{*abc}$	214.21 ± 2.48^{de}	318.00 ± 1.20^{f}	$426.22 \pm 6.02^{*}$

Table (7) The mean body weight gain (B.WT.G.)

Mean Body wt.gain (gm)	1st. Week	2nd. Week	3rd. Week	4th. week
control non- chalenged	58.69 ± 3.24^{abc}	73.19 ± 4.49^{de}	93.17 ± 3.79	97.29 ± 3.66
E.coli (oral)	42.82 ± 3.11*^{abc}	58.17 ± 2.75^{de}	72.72 ± 1.06*	69.58 ± 2.26*
E.coli (I/P)	45.25 ± 1.93*^{abc}	56.67 ± 1.46^{de}	68.84 ± 1.67*^{F}	73.25 ± 1.79*
S.Entertedes(oral)	47.50 ± 3.23*^{abc}	58.18 ± 5.46$_{de}$	65.18 ± 13.06*	82.62 ± 7.29*
S.Entertedes(I/P)	48.55 ± 2.34*^{bc}	61.15 ± 1.62^{de}	58.45 ± 1.42*^{f}	81.90 ± 1.33*
S.Typhymurium(oral)	48.31 ± 2.08*^{abc}	67.77 ± 2.32^{de}	72.08 ± 1.56*^{f}	81.19 ± 2.06*
S.Typhymurium(I/P)	40.25 ± 1.56*^{abc}	56.71 ± 1.82^{de}	68.59 ± 0.98*	76.82 ± 4.14*
S.Kentuky(oral)	45.15 ± 2.13*$_{bc}$	45.21 ± 33.47*	69.52 ± 2.64*^{f}	83.69 ± 2.92*
S.Kentuky(I/P)	46.11 ± 9.42*^{abc}	64.98 ± 3.49^{de}	68.66 ± 3.61*^{f}	79.84 ± 3.10*
S.Tamale(oral)	57.05 ± 2.47^{bc}	63.14 ± 6.57^{de}	79.79 ± 3.21*^{f}	87.58 ± 4.05*
S.Tamale(I/P)	44.52 ± 3.31*^{abc}	69.22 ± 3.07^{e}	78.70 ± 1.16*^{f}	86.85 ± 0.88*

Table (8) The average feed conversion rate(A.F.C.R)

Average F.C.R	week1	week2	week3	week4
Control non-chalenged	2.12 ± .12^{bc}	3.00 ± .16de	3.56 ± .08^{f}	4.49 ± .17
E.coli (oral)	2.45 ± .13*^{abc}	3.36 ± .14*^{de}	4.08 ± .21*	4.98 ± .13*
E.coli (I/P)	2.46 ± .05*^{ABC}	3.29 ± .10*^{DE}	4.22 ± .11*	4.82 ± .12*
S.Entertedes(oral)	2.41 ± .13*^{ABC}	3.51 ± .26*^{D}	4.11 ± .15*^{f}	4.78 ± .06*
S.Entertedes(I/P)	2.40 ± .17^{bc}	3.33 ± .18*^{de}	4.23 ± .16*^{f}	4.95 ± .14*
S.Typhymurium(oral)	2.41 ± .09^{bc}	3.01 ± .12de	4.26 ± .16*^{f}	4.87 ± .11*
S.Typhymurium(I/P)	2.74 ± .07*^{abc}	3.57 ± .05*^{de}	4.50 ± .10*^{f}	4.95 ± .06*
S.Kentuky(oral)	2.60 ± .14*^{abc}	3.28 ± .09*^{de}	4.33 ± .22*$_{f}$	4.78 ± .03*
S.Kentuky(I/P)	2.55 ± .43*^{abc}	3.28 ± .22*^{de}	4.28 ± .22*^{f}	4.87 ± .06*
S.Tamale(oral)	2.06 ± .01^{abc}	3.13 ± .21de	3.91 ± .03*^{f}	4.83 ± .08*
S.Tamale(I/P)	2.56 ± .15*^{abc}	3.10 ± .16^{d}	4.32 ± .52^{f}	4.91 ± .06*

* : significant with control group

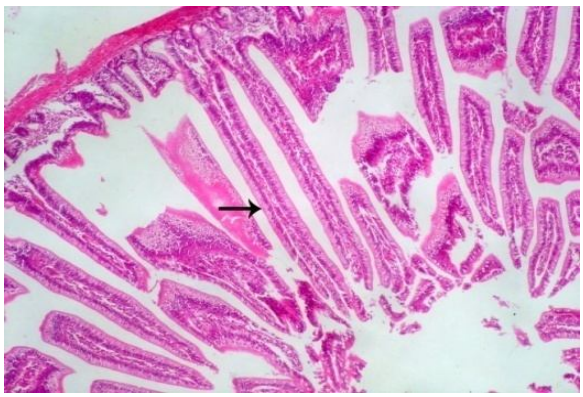

Fig.(1): Intestine showing normal intestinal villi lined by normal intestinal epithelium (arrow). (HE, 100x) **(control non challenged group)**

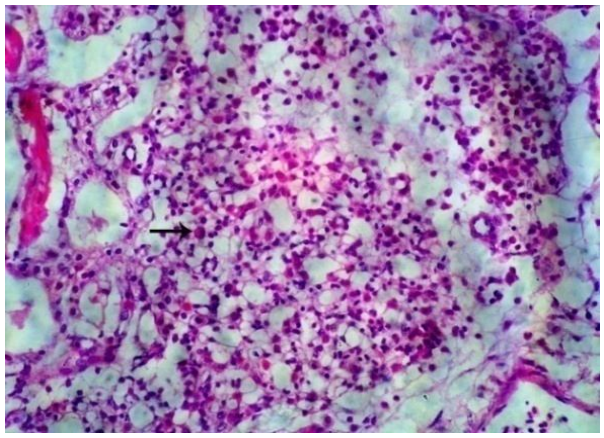

Fig.(2): Intestine showing edema and esinophilic infilterations in the submucosa (arrow). (HE, 400x) **(group challenged with E.coli. orally 1st. week p.i)**

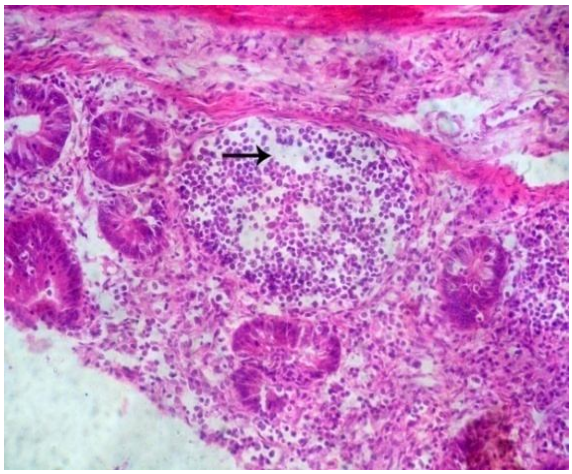

Fig.(3):Intestine showing lymphocytic depletion of payers patches (arrow). (HE, 400x) **(group challenged with S.enteritidis I/p 3rd. week p.i)**

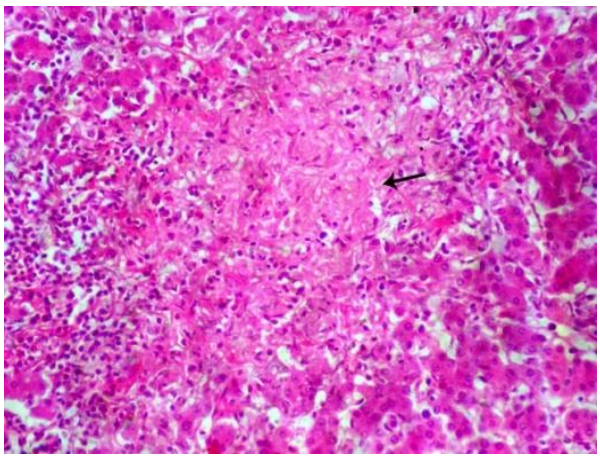

Fig (4) kidney showing coagulative necrosis and round cells and fibroplastic invasion (arrow). (HE, 400x) **(group challenged with S.kentuckey I/p 1st. week p.i)**

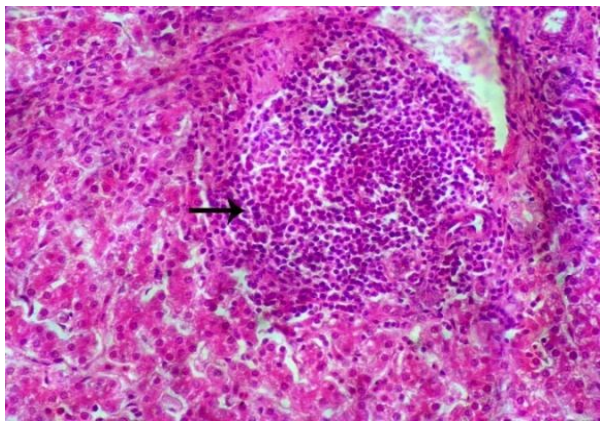

Fig (5) liver showing dense lymphocytic infilterations replacing hepatic tissue (arrow). (HE, 400x) **(group challenged with S.tamale I/p 2nd. week p.i)**

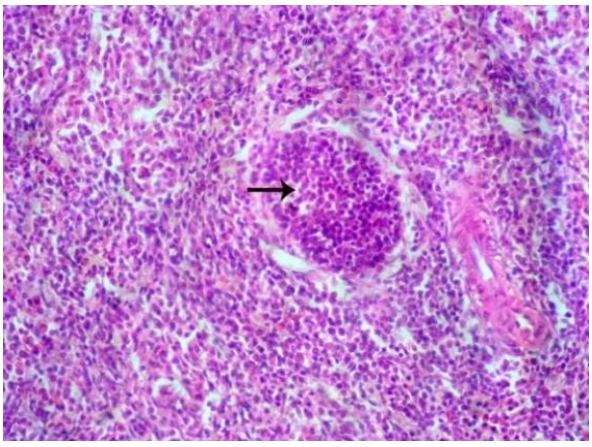

Fig (6) spleen showing aggregation of activated lymphocytes and esinophilic infilterations (arrow). (HE, 400x) **(group challenged with S.typhymurium orally 1st. week p.i)**

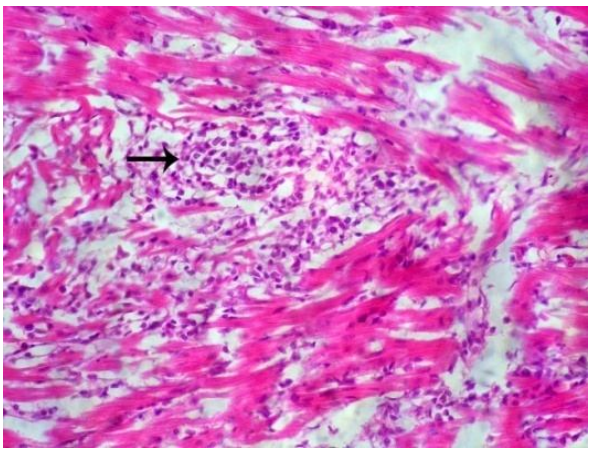

Fig (7) heart showing round cells infilterations and necrotic myocardium (arrow). (HE, 400x) **(group challenged with S.kentuckey I/p 1st. week p.i)**

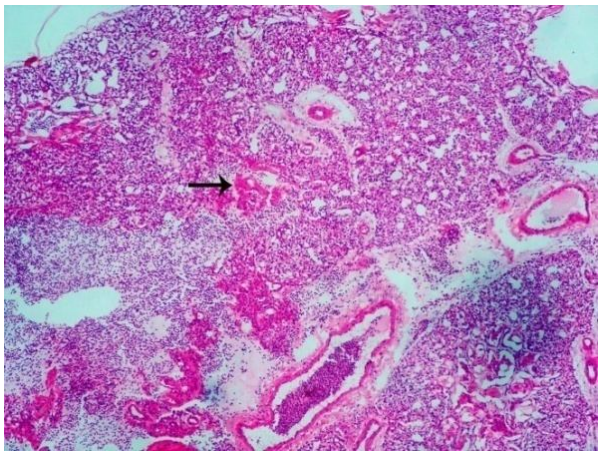

Fig (7) lung showing necrosis in air capillaries (arrow) and severe hemorrhage. (HE, 100x) **(group challenged with E.coli orally 3rd. week p.i)**

DISCUSSION

Broiler production is one of the most important sectors of poultry production in Egypt which is helping to bridge the gap in the production of meat.

In the present study , A total of two of suspected E.coli isolates and sex of suspected Salmonella isolates were recovered from 240 broiler farms in Dakahlea province (105 moribund chicks and 135 freshly dead chicks).All these isolates were exposed to biochemical and serological identification(in central health laboratories , Cairo , Egypt), the E.coli was of (O) serogroup and salmonella was S.enteritidis (50%),S. typhimurium (16.7%), S. kentukey (16.7%), S. tamale (16.7%).

The isolation rate of S.enterititis in this study (50%) was rapprochement the result of Novak and Polaharova **(1993)** who isolated S. enterititis by the rate of (50.8%). In contradistinction with **Bernardo and Machado(1990)** by the rate of (2.9%) ,**Menzies (1994)** by the rate of (11.7%) , **Carraminana et al (1994)** by the rate of (79.7%) , **Verma et al (2000)** by the rate of (9.87%) and **Wafaa et al (2012)** by the rate of (3.33%).

The isolation rate of S.typhimurium (16.7%) this result was nearly as the result of **Novak and Polaharova (1993)** who isolate S.typhimurium with isolation rate of (17.5%) , **Verma et al (2000)** by the rate of (18.1%) ,This result was disagreement with the result of **Smiko (1984)** who mentioned that isolation rate of S.typhimurium (25%) , **Bernardo and Machado(1990**) with isolation rate of (65.5%) ,**Menzies (1994)** by the rate of (22%) ,**Wafaa et al (2012)** by the rate of (29.4%) and **Ahmed (2014)** by the rate of (40%).

The isolation rate of S.kentukey was (16.7%),This result was disagreement with **Wafaa et al (2012)** by the rate of (7.8%). It is intersting to note the presence of S. tamale which not recovered in previous investigations.

In the present study we failed to isolate S.pullorum . This result is in agreement with **Barrosamado and Martins (1985) , Rudy (1985) , Krabish and Dorn (1986) , O'Breen (1988) , Merden (1988) , Smith and Watson (1989) , Bernardo and Machado (1990) , Novak and Polaharova (1993) , Menzies (1994) , Carraminana et al (1994) , Gast and Benson (1996) ,Sanaa (1997) Wafaa (2012) , Ahmed (2014).**

Although this result is in disagreement with **Ganguli (1958) , Verma et al (2000) , Abd El-Fatah (2014)** , who isolated S. pullorum . This may be attributed to periodical testing of the flocks by pullorum test or differances in localities or massive use of antibiotics.

The result of isolatoin of E.coli (O) serogroup was nearly as the result of **Azzam (1983) , Farid et al (1983) and Song gao et al (1999)** and was disagreement with **Sarhan (1977) , Andrawis (1980) , Cloud et al (1985) , Torkey et al (1995) , Blanco et al (1996) , Venkanagouda et al (1996) , Biswas et al (1996) , Wujie et al (1997) , Marwah et al (2010) , Eid (2013) , Hassan (2013) and Abd-Elhammed (2014).**

The pathogenicity test of both Salmonella isolates and E.coli isolates, we inoculate each isolates in day old male layer chicks (hyline breed) via two routes **(oral and I/P routes)** by the doses recorded in **table (2)** , the results were recorded in table (4), the findings reflect that :

- I/P inoculation lead to high mortalities

in comparison with oral inoculation in all isolates.

- S.ent. and S.typh. were the highly pathogenic when inoculated I/P lead to(11.9%) mortality of each, however E.coli ,S.kent., S.tam. lead to mortalities of (9.5% , 9.5% , 4.8%) respectively.
- S.typh. was the highly pathogenic when inoculated orally lead to(9.5%) mortality , however E.coli , S.ent and S.kent. lead to mortalities of (4.8% , 7.1% and 7.1%) respectively.
- S.tamale was non pathogenic when inoculated orally (0%) mortality.

The result of reisolation mentioned in tables (7,8,9) demonstrate that :

- **In orally chalenged groups:**

  The reisolation from the liver was significantly higher in chicks chalenged with E.coli (75%) , (70.8%) than chicks chalenged with S.tam. (54.2%). It was not significantly higher than chicks chalenged with S.ent. and S. ken. (66.7%) for each.

  The reisolation from the spleen was not significantly higher in chicks chalenged with S.ent. and S.ken. (41.7%) for each than chicks chalenged with E.coli and S.typh. (37.5%) for each. It was significantly higher than chicks chalenged with S.tam. (16.7%).

  The reisolation from the caecum was not significantly higher in chicks chalenged with S.tam. (58.3%) than E.coli (66.7%) , S.ent. (79.2%) ,S.typh. (66.7%) and S.ken. (66.7%).

- **In I/P chalenged groups:**

  The reisolation from the liver was not significantly higher in chicks chalenged with S.ent and S.ken. (83.3%) for each than chicks chalenged with E.coli (70.8%) , S.typh. (62.5%) , S.tam. (54.2%).

  The reisolation from the spleen was significantly higher in chicks chalenged with S.ent (75%)and S.typh. (66.7%) than S.tam. (16.7%). It was not significantly higher in chicks chalenged with E.coli (45.8%) and S.ken. (37.5%).

  The reisolation from the caecum was not significantly higher in chicks chalenged with S.ent. (100%) than chicks chalenged with S.tam. (83.3%).It was significantly higher than chicks chalenged with E.coli , S.typh. , S.ken. (66.7%) for each.

From the data recorded in table (10) the control non-chalenged group had the highest value of average feed intake in comparison with other chalenged groups , this result provide evidence that anorexia is one of the signs of Salmonellosis and Colibacillosis and this result was in agreement with **(Jordan 1990 , Calneek et al 1997)** .

No mortality was recorded in chicks chalenged orally with S.tamale , however there was adecrease in weight gain in comparison with control non-chalenged group , this indicate that salmonellosis not necessarily cause mortalities but it can affect Growth performance parameters.

Salmonella had ahetergenic effect as aresult of its effect on reducing feed intake and body weight gain And therefore increase F.C.R. and this was supported in our result in tables (10,11,12). These results were in agreement with **Lecoanet,(1992b),Dhillon et al (1999) and Chen et al (2002).**

CONCLUSION

Finally , it could be concluded that :

- bacterial diseases were the most important factor causing mortalities in broiler chicks during the first week of life .
- Colibacillosis and Salmonellosis were the main bacterial diseases responsible for this problem.
- E.coli (o) group was the main isolate from chicks had colibacillosis in present study
- Isolation of Salmonella enteritides, Salmonella typhimurium , Salmonella kentuky and Salmonella tamale from broiler chicks in present study were (50%,16.7%,16.7%,16.7% respectively).
- The pathogenicity test revealed that I/P inoculation lead to higher mortalities than oral inoculation.
- In comparison with oral inoculation .
- The result of oral inoculation provide evidence that S.typhimurium was more pathogenic (9.5% mortality) than E.coli, S.enteritidis, S.kentuky and S.tamale causing mortalities 4.8%,7.1%,7.1% and 0%respectively.
- The result of I/p inoculation provide evidence that S.enteritides and S.typhimurium were more pathogenic (11.9% mortality) than E.coli, S.kentuky and S.tamale causing mortalities 9.5%,9.5%,4.8% and 0%respectively.

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الملخص العربي

دراسة استقصائية عن الامراض البكتيرية المسببة للنفوق فى الاسبوع الاول من حياة كتاكيت التسمين

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في دراسة لاستبيان الأمراض البكتيرية التي تسبب النفوق في الأسبوع الأول من حياة كتاكيت التسمين في مزارع التسمين بمحافظة الدقهلية ، كان هناك اختلافات في سلالات، وعمر وأعداد هذه الطيور وأيضا كانت هناك اختلافات في مناطق هذه المزارع . في الوقت نفسه كان هناك اختلاف بمعدلات النفوق. وأظهرت النتائج بعد تحديد شكل النمو علي النابت البكتيري والاختبارات البيوكيميائية والسيرولوجية أن البكتيريا السائدة كانت السالمونيلا بنسبة 75% يليها الميكروب القولوني بنسبة 25%.وحددت الاختبارات المصلية التى أجريت بالمعامل المركزية بوزارة الصحة ثلاث معزولات من السالمونيلا انتريتيدس ومعزولة واحدة من كل من السالمونيلا تيفيميوريم والسالمونيلا كنتاكى والسالمونيلا تامالى،أما بالنسبة للميكروب القولوني كان هناك معزولتان من المجموعة (O) تم إجراء اختبار الضراوة عن طريق حقن المعزولات في كتاكيت عمر يوم واحد بطريقتين (عن طريق الفم وعن طريق الحقن في البريتون)، وتمت ملاحظة العلامات السريرية والصفات التشريحية و الآفات النسجية ومعدلات الأداء لكل مجموعة فرعية . وأظهرت النتائج وجود نافق وتبين أن معدلات النفوق كانت أعلى بالعدوى عن طريق البريتون منها عن طريق الفم وأيضا أعراض ظاهرية واحتقان حشوي فى معظم المجموعات ماعدا المجموعة الضابطة. وأثبتت الآفات النسيجية علامات احتقان في الكبد والرئة وبعض الأنسجة الأخرى .وأظهرت معدلات الأداء معدلات أوزان قليلة طوال فترة التجربة (٤ أسابيع) بالمقارنة مع المجموعة الضابطة