

SOME STUDIES ON CLINICAL, HAEMATOLOGICAL AND BIOCHEMICAL CHANGES IN PNEUMONIC LAMBS WITH TRIALS OF TREATMENT

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SUMMARY

A total of 29 lambs (1-1.5 years old) with average body weight 30-40 kg (5 clinically healthy lamb and 24 pneumonic lambs) were used in this investigation these lambs were belonged to a private farm in Sharkia Governorate this study aimed to investigate some hematological and biochemical changes associating it in lambs were divided into three groups the first group (5 lambs) was apparently healthy and served as a control group the pneumonic lambs were divided into two equal groups 12 lambs in each second group 12 lambs in each second group received therapeutic doses of florfenicol (200 IM) with 48h interval between third group received therapeutic dose of gentamycin (IM) for 5 successive days blood samples were collected from each lamb by jugular vein puncture before treatment and 5, 10 and 20 days post treatment for hematological and some biochemical parameters determination.

The main clinical signs in pneumonic lambs were fever bilateral nasal discharge moist cough dyspnea fever congested mucous membrane lacrimation abnormal respiratory sound inappetence weakness and ended by recumbency .

Bacteriological examination of the culture swabs revealed that the isolated bacterial pathogens were pasteurilla multocida (29.17%) E.coli (16.67%) staph. aureus 12.50 strept pyogen kelbsiella pneumoniae 8.34% and mixed infections including (pasteurilla multocida and E coli) 20.82% .

Antibiogram studies revealed that florfenicol , gentamycin and enrofloxacin were the most effective antibacterial against most bacteria isolated from pneumonic lambs

Hematological investigations revealed microcytic hypochromic anaemia represented by a significant decrease of total erythrocytic counts haemoglobin content and packed cell volume % lymphocyte and platelets copulate with leucocytosis associated with neutrophilia, eosinophilia and monocytosis .

Biochemically ,there were elevation in liver enzymatic activities of (AST-ALT) Gamma glutamyl Ttransferase (GGT) Glucose ,urea nitrogen creatinine and phosphorus and insignificant increased in alkaline phosphatase , lactic dehydrogenase (LDH)significant decrease in total protein ,albumin , globulin , calcium,sodium and insignificant decrease potassium but magnesium insignificantly increased in pneumonic lambs in compared . to healthy one were also recorded .

It could concluded that pneumonia induce some adverse effect on haematological biochemical parameters which returned to the normal levels post treatment by florfenicol or gentamycin, but florfenicol has a better efficacy in treatoemia in lambs than gentamycin .

INTRODUCTION

Despite many years of intensive research efforts infectious respiratory disease continue to be major cause of economic loss and adverse effects on animal welfare .the syndrome arise from a number of factors including those involving the animal, e.g bacteria, **virus El seidy, et al. (2003)**

Respiratory infections represent one of the most diseases of sheep especially lambs which cause serious economic losses (**hamdy 1959**).

In several previous investigations *Pasteurella multocida* was incriminated as the causative agent responsible for respiratory disorders in sheep (**Morad , et . al., 1980 and callan , et. Al. 1991**). Although many efforts were done for controlling the disease through medication and vaccination, a continuous research for new drugs for controlling the disease is a necessity . (**Gilmour and Angus 1993**). Respiratory affections particularly pneumonia is a major problem of the calves, so it is considered as a major source of economic losses to all domestic animals (**Wilson et al., 1985 and Ibrahim, et.al. 1988**). The causes and forms of pneumonia are bacteria , viruses fungi , parasite or mixed infection while poor hygienic measures climatic disorders and stress environmental pollution were the most predisposing factors to such infection (**Yousef et al. 1992 and Sharma and Woldehiwet , (1995)** . The Inflammatory Lung diseases were generally accompanied by marked drop of erythrocytic counts and marked elevation of total leucocyte counts in pneumonic calves (**El-Hamamy , et.al. 1999 and El-bealawy , 2003**) . Furthermore in advanced cases febrile disease usually associated with hyperpyrexia and metastatic infection of lungs , liver and kidneys which may lead to hepatic and renal dysfunctions (**Kaneko , 1997 ; Selim , et.al.,1997 ; Soroor , 1999 and Radostitis , et.al., 2002**) . Gentamicin is an aminoglycoside antibiotic Isolated from *micromonospora purpurea* . It is effective against both G+ve

and G- ve organisms (Tobin 1979). The mechanism of action of gentamicin involves irreversible inhibition of bacterial ribosomes and therefore impairs protein synthesis , (Drjan and Kwan 1983) This aminoglycoside is widely used in veterinary and human medicine because of its efficacy in treating drug resistant G+ve and G-ve bacteria infections (Karlowsky , et. al. 1995) . Unfortunately , it has a narrow therapeutic index (Swartz 1997) , and high potential for nephrotoxicity and ototoxicity (Choudhury and Ahmed 1997) found that toxicity develop as a result of marked accumulation and retention of the aminoglycoside in the proximal tubular cells . Florfenicol is a synthetic antibiotic possessing a wide spectrum of activity against many gram negative bacteria (Syriopolou , et.al. 1981) . Although florfenicol is a structural analogue of thiamphenicol , it has a superior spectrum activity and its more potent component (Verma , et.al., 1986 and Marshall , et.al., 1996) . Florfenicol different from thiamphenicol in substitution of fluorin atom for a hydroxyl group that making its superior than thiamphenicol (verma , et.al., 1996).

The aim of this study was to evaluate the effect of pneumonia on the haematological and some biochemical values as well as to evaluate the efficacy of florfenicol and gentamicin for treating pneumonia in lambs .

MATERIALS AND METHODS

Drugs :-

1st- gentamicin (Garavel) Egypt

2nd- Florfenicol (Nuflo) from (Schering - Plough Animals Health).

Animals :-

This study was carried out in a private farm at Blehls city (Sharkia - Governorate) during the period from September 2005 to November 2005 A total of 29 Lambs (1-1.5 years old) with average body weight 30-40 kg were studied lambs were used in this investigation Lambs were divided into three group first group (5) was clinically healthy free from internal and external parasite and saved as control group (24) lambs suffering from slight of respiratory troubles including bilateral nasal discharge moist cough dyspnea fever congested mucous membranes lacrimation , abnormal respiratory sounds inappetence moreover, the rectal temperature was elevated 40-41C° weakness and later on recumbency Pneumonic lambs divided into two equal groups 12 lamb in each Second group pneumonic lambs and treated with therapeutic doses (20 mg/kg b.wt.) of florfenicol two doses in between 2 days (Lin) Madinat (1982) . Third group pneu-

monie lambs were treated with therapeutic dose of gentamycin (5 mg/kg b. wt.) for 5 successive days (I.M) .

Rectal Temperature :

Rectal temperature was recorded daily for the diseased lambs up to for 10 days post treatment .

Bacterial Examination :

Sterilized swabs were taken from Nasopharyngeal of apparently healthy and diseased lambs for bacteriological examination . The collected samples were incubated on nutrient broth at 37°C for 24 h ., then subcultured into selective media according to (**Woldehiwet , et.al. 1990**) . All bacterial isolates were identified **Holt , et.al. (1994)**.

Antibiotic sensitivity :

In vitro antibiotic sensitivity test of different isolated microorganism against antibacterial agents was carried out using disc method described by **Plair et.al. (1970)** The antibiotic used Florfenicol (30 ug) gentamycin (10 ug) Cefloxiel sodium (10 ug) Kanamycin (30 ug) Lincospectin (15 ug) Spectinomycin (10 ug) Erythromycin (15 ug) and Flumequine (30 ug) .

Blood Samples :

Two blood samples were collected from each lambs by Jugular vein puncture before treatment at 5 , 10 and 20 days post treatment . The first sample (5ml) was collected from each lambs on heparinized tube for hematological study . The second blood sample (10ml) were collected in clean dry centrifuge tube without anticoagulant , left at room temperature and then centrifuged at 3000 r.p.m. for 5 minutes . The separated sera were used for some biochemical parameters determination

Haematological studies :

Blood picture (Total erythrocytic count , packed cell volume percent , hemoglobin and total leukocyte count were performed according techniques described by **Jan. (1988)** .

Biochemical studies :

Obtain clear serum were used for measuring the activities of serumtransaminases (AST.- ALT.) according to **Reitman and Frankel (1957)** , alkaline phosphatase according to (**John 1982**) gamma glutamy l transferase (GGT) **Szasz (1969)** lactic dehydrogenase (LDH) (**Mequeen, 1972**) total protein , albumin and globulin (**Grant , et.al. (1987)** , glucose , **Trinder (1969)** , urea **Fawcet and Scott (1960)** , creatinine (**Husdan and Raporpot (1968)** calcium **Gindler and King (1972)** inorganic phosphorus **Goldenberg (1966)** magnesium **Gindler and Heath (1971)** and sodium (**Henry , et.al. 1974**) .

Treatment trials :

Two groups of infected lambs with pneumonia were treated with either florfenicol (20mg/kg b.wt.) two doses inbetween 2 days (I.M) or gentamycin (5mg/kg b.wt) intramuscular route from the respective drug for 5 consecutive days .

Statistical analysis :-

The obtained data were tabulated and statistically analyzed according to **Petrie and Watson (1999)**

RESULTS

The main clinical signs observed including bilateral nasal discharge moist cough dyspnea fever, congested mucous membranes lacrimation, abnormal respiratory sounds inappetence weakness and later on recumbency .

1) Rectal temperature

It is clear from Table (1) that the recorded rectal temperature in pneumonic lambs ranged between 32 to 41c. The rectal temperature of lambs treated with florfenicol or gentamycin returned to the nearly normal levels post three days of treatments , while the rectal temperature of lambs treated to the nearly normal levels post three days of treatment while the rectal temperature of lambs treated with gentamycin returned to normal level after 3-6 days post drug administration.

2) Bacteriological Isolation

Bacteriological examination of the culture swabs from 20 pneumonic animals revealed that the isolated bacterial pathogens were *Pasteurella* spp. (7 cases) 29.17% *E.coli* (4cases) 16.67% *Staph. aureus* (3cases) 12.50% *Strept. pyogen* (3cases) 12.50% *Klebsiella pneumoniae* (2 cases) 8.33% and mixed infections including (*Pasteurella multocida* and *E.coli*) 5 cases 20.83% table (2).

3) Antibacterial sensitivity tests

Table (3) revealed that the isolated strains showed a highest sensitivity to Florfenicol followed by gentamycin Enrofloxacin, Cefotaxime sodium spectinomycin Lincomycin and Kanamycin respectively and the least sensitivity was found against Flumequinone and erythromycin .

4) Hematological Values

The data obtained in the table (4) showed that a significant decrease in erythrocytic count hemoglobin content , packed cell volume percent Lymphocyte and platelets coupled with leukocytosis , associated with neutrophilia eosinophilia and monocytosis of lambs suffering from pneumonia Hematological parameters were returned to the normal levels at 20 days post treatment .

5) Biochemical

Pneumonic calves show elevation in liver enzymatic activities of aspartate aminotransferase (S.AST) , alanine aminotransferase (AL.T) Gamma glutamy 1 transferase (GGT) glucose urea nitrogen creatinine and phosphorus and insignificant increased in alkaline phosphatase . Lactic dehydrogenase (LDH) with significant decrease in total protein albumin , globulin

Calcium , sodium and insignificant decrease potassium but magnesium insignificantly increased in pneumonic lambs in compared to health one This parameters returned to the normal levels 15 days following treatment tables (5-7)

6) Anti - bacterial in vivo "Efficacy"

Improvement of clinical symptoms was observed following administration of either florfenicol or gentamycin . It was found that treatment with florfenicol was the best than treatment with gentamycin because the total cure rate of florfenicol was 100% at 4 days post treatment while

that of gentamycin was 100% at 6 days post treatment table (8).

DISCUSSION

Respiratory diseases are often considered as the most significant causes of economic losses in feedlot cattle in addition great economic losses occurred due to the deaths of animals from respiratory diseases cost of treatment , weight loss prolonged feeding period and prevention programs (**Leukeux ,et.al.1985**) . The clinical sign of pneumonia in lambs in this study were congested mucous membranes lever bilateral nasal discharge moist cough abnormal respiratory sounds dyspnea and recombency were observed previously by **Novert (2004)** and **Abdalla and Emam (2005)** in calves and lambs respectively

Rectal temperature of diseased lambs were 41.32^oc and 41.40^oc and returned nearly to the normal levels at 4 and 6 days post treatment with florfenicol or gentamycin respectively our results regarding florfenicol were reinforced by the study carried by **Hanafy and Elsa (2004)** the auther reported that florfenicol had better results in reducing rectal temperature and improving clinical signs in calves infected with respiratory disease .

Bacteriological examination of the culture swabs from diseased animals revealed that the isolated bacterial pathogen were *pasteulla* spp. , *Ecoll* *staph aureus* *strept pyogens* *kellbsiclla* *pneumoniae* and mixed infection (*pasteurlla* spp., + *E.coli*) in percentage of 29.17%, 16.67%, 12.50%, 12.50% , 8.33% and 20.83% respectively were the main causative organism that responsible for pneumonia in tested lambs These finding were similar to that reported by **El-Rawy and Gorgi (2001)** and **Hanafy and Elsa (2004)** in sheep and cow-calves respectively Disc diffusion testin widely used for antimicrobial sensitivity test for reasons of time simplicity and cost (**Green Wood 1978**) in present study by using the disc-diffusion test showed that the most effective tested drugs act on all isolated organisms were florfenicol gentamycin enroloxacin flunocquine erythromycin and oxytetaeycline but isolated **El-Sayed (1992)** who mentioned that gentamycin had high inhibitory effect on *E-coli* *Strept uberts* and *Klebscilla* (**Hanafy and Elsa (2004)** **Abdalla and Emam (2005)** concluded that the florfenicol highly active against *pasteurlla* spp. in cow-calves and lambs respectively .

The present work revealed that pneumonic lambs show niterocyte hypochromic anaemia represented by significant reduction in erythrocytic counts haemoglobin content packed cell volume percent , lymphocyte and platelets associated with significant increase in leukocyte count and neutrophil similar findings were reported by **El-Sayed, et.al. (1992)**, **Kodary and Abdalla (2001)** and **Abdalla and Emam (2005)** in fattaloc calves and lambs respectively who recorded a significant decrease in the erythrocytic counts haemoglobin content packed cell volume percent ,

lymphocyte and platelets and increase in total leukocytic count and neutrophils in pneumonic animal . The change in erythrogram may be attributed to the failure of bone marrow cells and hepatocytes for utilization and hemoglobin synthesis resulting in inhibition of erythropoiesis during bacterial infection (**Kaneko, 1997**) and the change in leukogram observed in this study may be due to bacterial infections and inflammatory lesions in lung (**Coles 1986**) . The hematological parameters in diseased lambs were improved towards the normal level at 20 days post treatment with florfenicol and gentamicin . The reversible increase of hematological parameters post treatment with both drugs were supported by **Hanafy and Elsa (2004)** they reported that treatment pneumonic cow-calf with florfenicol induce improvement of erythrogram and leukogram 2-3 week post treatment but Omran et.al.(2005) found that blood parameters of pneumonic calves were returned towards the values of the control group after 15 days post treatment with in the current study ; pneumonia gentamycin .

Caused changes in some biochemical parameters in serum of diseased lambs showed a significant increase in transaminases (AST and ALT) , GGT significantly increased but serum alkaline phosphates and lactic dehydrogenase (LDH) did not show any change in lambs suffering from pneumonia . This results could be due to the degenerative and necrotic changes accompanied the damage of pulmonary tissue due to bacterial infection and its toxins (**Keneko , 1989**) . Our results agree with **Kodary and Abdalla (2001)** buffalo calves and sheep respectively **El-Sherbini, et.al.(1996)** reported that pneumonia induce non any change in alkaline phosphates in pneumonic buffalo-calves **Abdou , et.al. (1989)** , **Mokhbatly and Selim (1999)** , and **Hanafy and Elssa (2004)**.

Recorded that pneumonia induced insignificant change of lactic dehydrogenase (LHD) . Serum GGT show significant increase in the activity in lambs suffered from pneumonia . Same results were reported by , **Gharib (1989)** and **Mokhbatly and Selim (1999)** in buffalo and cow-calves . This enzyme is widely distributed all over the body cells and tissues Furthermore its increase reflects an active pathological process without referring to the site of affection .

Diseased lambs showed a significant decrease in total proteins albumin globulin and non significant alteration in A/G ratio The above mentioned results were supported by previous studies **Kodary and Abdalla (2001)** **El-Seldy et.al.(2003)** in lamb and rabbit respectively The decrease in total protein albumin and globulin was described by **Selim et.al. (1997)** who recorded that the reduction in the proteinogram may be attributed to the state of anorexia and inability of the liver to synthesis proteins Moreover , bacterial toxins increased the capillary permeability and permitted escape of plasma proteins into tissue resulting in hypoproteinemia (**Doxy 1971** and **Naser and El-Saed 1997**) . These results seem to agree with those reported **Cornelius (1960)** who considered febrile diseases to be the most common reasons for hypoproteinemia and hypo-

albumina Proteinoogram returned to the normal level at 21 days post treatment with florfenicol or gentamycin . Our finding was in greenment with those obtained by **Hanafy and Eissa (2004)** .

Concentrations of glucose level in the lambs suffering from pneumonia in our gained results were evident to show highly significant increase in comparison with apparently healthy lambs . These results coincided with those obtained by **Mokhbatly and Selim (1999)** and **Abdalla and Emam (2005)** in calves and lambs respectively . **Coles (1986)** attributed the cause of hyperglycemia to aneroxia liver glucose is unstable in the presence of deficient oxygen supply in pneumonic calves.

Analysts of blood serum constituents of pneumonic lambs in this study revealed a significant increase in urea and creatinine. This increase in urea and creatinine may be attributed to increase protein catabolism and febrile respiratory disease impaired cardiac function and decrease renal blood flow which might occur in cases of pneumonia which tend to increase urea and creatinine levels (**Radostitis , et.al.1995**) . This finding fitted closely with those of (**Mokhbatly and Sellm (1999)** and **El-Seidy , et.al.(2003)** in calves and rabbit respectively . Serum electrolytes levels including calcium and sodium were (significant decrease in pneumonic lambs Decreased calcium was coupled with significant increase in phosphorous level in the pneumonic lambs the decreased calcium level in serum may be due to the decreased of calcium from damaged renal tubules (**Coles 1986**) and may be associated with hypoproteinemia (**Kaneko 1997**). Our results was in agreement with those obtained by **Osama et.al.(2000)** . Comparing the recovery rate from pneumonia by treating with florfenicol or gentamycin and with previously mentioned doses revealed that the cure rate was 100% at 4 and 6 days post treatment respectively . These finding were similar to that reported by **Hanafy and Eissa (2004)**.

Recovery from the disease was confirmed through the recorded after treatment with florfenicol, gentamycin and measured parameters .

It could be concluded that florfenicol has a good efficacy in treatment of pneumonia in lambs than gentamycin .

Table (1) : Mean rectal temperature of diseased lambs before and after 10 days post treatment by with florfenicol (20 mg/kg. B.wt.) or gentmycin (5 mg/kg b,wt)

Temperature of diseased lambs											
Drugs	Pretreat ment	Days post traetment									
		1	2	3	4	5	6	7	8	9	10
Florfenicol	41.84±0.48	41.04±0.54	40.13±0.71	39.24±0.51	39.39±0.71	39.18±0.79	38.84±0.61	38.67±0.51	38.60±0.39	38.56±0.27	38.43±0.41
Gentamycin	41.53±0.56	41.17±0.52	41.03±0.45	39.84±0.47	39.73±0.06	39.37±0.53	38.98±0.73	38.75±0.19	38.93±0.78	38.60±0.51	38.63±0.39

Table (2) Bacteriological isolation causing pneumonia in lambs at Sharkia Governorate (N. = 24)

No. of tested Lambs	Pasteurilla multocida		E-coli		Staph. Aureus		Strept pyogen		Klebsella pneumoniae		p. multocida + E. col	
	a	b	a	b	a	b	a	b	a	b	a	b
24	7	29.17%	4	16.67%	3	12.50%	3	11.50%	2	8.34%	5	20.82%

A = No. of isolates

b =Percentage of isolates

Table (3): Sensitivity tests of isolated organisms against different antimicrobial agents

Antibiotic Discs	Disc concentration	pasteurilla multocida	E. coli	Staph. Aureus	Strept. Pyogen	Klebsiella Pneumoniae	Mixed infection
Florfenicol	30ug	—	—	—	—	—	—
Gentamycin	10ug	—	—	—	—	—	—
Ceftiofur sod.	10ug	—	—	—	—	—	—
Kanatomycin	30ug	—	—	—	—	—	—
Erythromycin	15ug	—	—	—	—	—	—
Spectinomycin	10ug	—	—	—	—	—	—
Flumequinone	30ug	—	—	—	—	—	—
Enrofloxacin	10ug	—	—	—	—	—	—

Table (4):- Effect of marbofosacin (3mg/kg. b.wt.) or marbofloxacin (3mg/kg.b.wt) with isoflupredone acetate (0.2mg/ kgb.wt.) on Haemogram of healthy and pneumonic lambs after L.M. injection for 5 consecutive days at 7, 14, and 21 days post injection

Parameter	Healthy lambs "control" (n=5)	Pretreatment (n=24)	Pneumonic lambs					
			Post treatment (days)					
			Florfenicol (n=12)			Gentamycin (n=12)		
			5 days	10 days	20 days	5 days	10 days	20 days
RBCs (106/cm.m)	3.96±0.46	6.24±0.36**	6.70±0.25**	7.91±0.42*	8.31±0.52	6.43±0.32*	7.13±0.42*	8.49±0.52
Hb (gvc/dls)	12.67±0.89	8.35±0.82**	9.45±0.82*	10.38±1.00	11.34±1.16	9.20±0.89*	10.78±0.92	11.62±0.59
P.C.V. %	37.95±1.37	29.73±1.92**	32.67±1.93*	34.82±1.73	36.35±1.34	31.87±0.92*	35.61±1.37*	35.89±1.37
W.B.Cs (103/cm.m)	10.95±0.37	12.47±0.24**	12.05±0.27*	11.37±0.37	10.43±0.62	13.24±0.13**	11.42±0.21	10.36±0.61
Lymphocyte (103/cm.m)	4.12±0.47	2.46±0.34**	2.90±0.16*	2.12±0.19	2.96±0.32	2.74±0.23*	3.39±0.22	3.83±0.32
Neutrophils ((103/cm.m)	3.1±0.23	4.62±0.54**	4.39±0.24*	3.62±0.22	3.41±0.21	4.64±0.41*	3.75±0.21*	3.51±0.53
Monocyte (103/cm.m))	1.4±0.19	2.67±0.29**	2.10±0.24*	2.16±0.42	1.95±0.24	2.37±0.21**	2.21±0.23*	1.64±0.31
Eosinophils (103/cm.m)	1.32±0.25	2.77±0.37**	2.66±0.21**	2.57±0.42*	1.11±0.12	2.69±0.26**	2.10±0.24*	1.32±0.23
Platelets (103/cm.m)	379.94±14.70	313.94±12.52**	338.10±12.93*	339.41±19.24	371.98±13.63	331.12±13.34*	353.72±16.75*	368.76±17.84

**P < 0.01 *P < 0.05

Table (5) : Effect of florfenicol (20 mg/kg. b.wt.) or gentamycin (5 mg/kg b.wt.) on live enzyme of healthy and pneumonic lambs before and at 5,10 , and 20 days post treatment .

Parameter	Healthy lambs "Control" (n = 5)	Pneumonic lambs						
		Pretreatment (n = 24)	Florfenicol (n = 12)			Gentamycin (n = 12)		
			5 days	10 days	20 days	5 days	10 days	20 days
Ast (U/L)	43.73±4.12	64.43±5.94**	57.89±3.43*	51.64±3.89	46.47±3.95	55.83±2.94*	49.84±2.32	45.92±2.83
ALT(U/L)	26.93±3.89	42.73±4.83*	38.94±4.73*	34.51±2.64	32.81±2.03	40.12±2.45*	37.93±2.41*	33.94±2.54
AKPph.(U/ml)	26.93±3.25	31.36±2.86	30.73±1.38	28.62±2.76	26.89±1.89	31.84±2.84	29.78±2.65	27.92±1.98
L.D.H.(U/L)	374.64±25.49	391.42±29.14	385.89±5.79	380.92±6.82	376.62±5.93	389.32±4.81	384.27±7.83	376.32±4.98
GGT(U/L)	12.56±1.43	18.65±1.47**	16.98±1.46*	15.73±1.95	14.94±1.63	18.94±1.06**	17.46±1.64*	14.89±1.79

* P < 0.05

** P < 0.01

Table (6) : Effect of florfenicol (20 mg/kg. b.wt.) or gentamycin (5 mg/kg b.wt) on some biochemical parameters of healthy and pneumonic lambs before and at 5 , 10 , and 20 days post treatment .

Parameter	Healthy lambs					Pneumonic lambs post treatment (days)		
	"Control" (n = 5)	Pretreatment Florfenicol (n = 12)			Gentamycin (n = 12)			
		(n = 24)	5 days	10 days	20 days	5 days	10 days	20 days
Glucos (mg/dl)	88.90±3.29	101.34±2.01**	97.32±2.11*	90.31±2.13	87.43±2.62	98.42±2.14*	95.21±3.16	90.32±2.76
Urea (mg/dL)	20.72±2.30	32.9±2.91**	30.12±1.56**	25.61±1.82	21.98±1.82	29.61±1.52**	26.78±1.12*	23.96±1.59
Creatinine (mg/dL)	2.06±0.31	4.02±0.61**	3.73±0.56*	3.09±0.52	2.30±0.36	3.91±0.44**	3.23±0.34*	2.42±0.42
Calcium (mg/dl)	10.24±0.65	7.34±0.52**	8.38±0.32*	9.45±0.72	10.21±0.52	8.12±0.51*	9.38±0.43	10.13±0.369
Phosphorus (mg/dl)	6.32±0.52	9.34±0.83**	8.45±0.61*	7.52±0.42	6.40±0.52	8.66±0.46**	7.55±0.43	6.32±0.56
Sodium (mEq/l)	146.14±6.03	116.8±6.67**	125.94±5.09*	134.71±4.92	143.63±5.97	171.59±4.91**	130.46±4.58*	141.73±6.38
Potassium (mEq/l)	5.48±0.72	4.21±0.24	4.53±0.42	7.93±0.41	5.32±0.36	4.43±0.51	4.87±0.57	5.25±0.39

* P < 0.05

** P < 0.01

Table (7) : Effect of florfenicol (20 mg/kg. b.wt.) or gentamycin (5 mg/kg b.wt.) on protienogram of healthy and pneumonic lambs before and at 5,10 , and 20 days post treatment .

Parameter	Healthy lambs					Pneumonic lambs post treatment (days)		
	"Control" (n = 24)	Pretreatment Florfenicol (n = 12)			Gentamycin (n = 12)			
		(n = 5)	5 days	10 days	20 days	5 days	10 days	20 days
T.P. (gm/dl)	7.79±0.29	5.84±0.80*	6.68±0.42*	7.11±0.48	7.15±0.68	4.87±0.78**	5.64±0.90*	7.47±0.96
Alb. (gm/dl)	3.40±0.28	2.10±0.37**	3.15±0.15	3.32±0.27	3.30±0.28	2.49±0.25*	2.78±0.10*	3.48±0.17
T.GLOB (GM/ Dl)	4.39±0.24	3.74±0.15*	3.53±0.19*	3.79±0.57	3.85±0.31	2.38±0.55**	2.86±0.52*	3.99±0.89
A/G ratio	0.77±0.09	0.56±0.06	0.89±0.15	0.88±0.14	0.86±0.17	1.05±0.0.18	0.97±0.0.14	0.89±0.16

* P < 0.05

** P < 0.01

Table (8) : Effect of treatment with florfenicol (20 mg/kg. b.wt.) or gentamycin (5 mg/kg b.wt.) to Pneumonic lambs .

Drugs	Total number	3 days post treatment		4 days post treatment		6 days post treatment	
		Of lambs	Number of cured lambs	Percent	Number of cured lambs	Percent	Number of cured lambs
florfenicol	12	6	50%	12	100%	-	-
Gentamycin	12	5	41.67%	9	75%	12	100%

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الملخص العربي

دراسة على بعض المشاهدات الإكلينيكية الدموية والبيوكيميائية
لمحالات الالتهابات الرئوية في الحملان مع محاولة العلاج

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معهد بحوث صحة الحيوان (معمل الزقازيق)

تم إجراء هذا البحث على ٢٩ حمل (١-٣-٤٠ كجم) بمزرعة خاصة بمحافظة الشرقية ، اشتملت على عدد ٥ حملان سليمة إكلينيكيًا وكذلك ٢٤ حمل تعاني من التهابات رئوية مصحوبة بارتفاع درجة حرارتها أعلى من ٤٠.٥ م ، قسمت الحملان التي تعاني من الالتهاب الرئوي الى مجموعتين الثانية والثالثة مصابة وتعالج بالجرعة العلاجية من الفلوروفينكول (٢٠ ملجم/كجم من وزن الجسم) بجرعتين الفرق بينها ٤٨ ساعة ، والجنتاميسين ٥ ملجم/ كجم من وزن الجسم لمدة خمس أيام على التوالي .

تم اخذ عينتين دم من كل حيوان الأولى على هيبارين وذلك لدراسة التأثير على صورة الدم والأخرى لفصل المصل وذلك لدراسة التأثير على بعض الوظائف البيوكيميائية .

وقد تم عزل الميكروبات باستريلامنتوسينا بنسبة ١٧ ، ٢٩ ، الميكروبات القولونية العنقوى بنسبة ٦٧ ، ١٦ ، استريتكوكس بهوجين بنسبة ٥٠ ، ١٢ ، استاقيلوكوكس اريس بنسبة ٥٠ ، ١٢ ، كليسيلا توني بنسبة ٣٧ ، ٨ ، وعدوى مشتركة (الميكروب العنقوى مع باستريلامنتوسيدا) بنسبة ٨٢ ، ٢٠ .

ويعمل اختبار الحساسية لهذه المعزولات وجد ان الفلوروفينكول والجنتاميسين الاثروفلوكساكلين اكثر المضادات الحيوية تأثيراً على هذه المعزولات وقد أدى استخدام الفلوروفينكول والجنتاميسين الى السيطرة بنجاح على هذه المشاكل المرضية

بعد أسبوع من العلاج لم يتم عزل اي ميكروب من الدم واختفت أعراض الالتهابات الرئوية من الحملان المريضة وعادت درجة حرارتها لوضعها الطبيعي واستعادت علامات الصحة وكان لعقار الفلوروفينكول الافضلية عن عقار الجنتاميسين .

يبين لنا من تلك الدراسة ان الالتهابات الرئوية أحدثت بعض التغيرات في صورة الدم وبعض الوظائف البيوكيميائية وتشير النتائج ان الالتهابات الرئوية أدت إلى حدوث نقص معنوي في عدد كرات الدم الحمراء ، تركيز الهيموجلوبين ، حجم الخلايا المنخفضة ، الخلايا الليفافية والصفائح الدموية وزيادة معنوية في كرات الدم البيضاء ، الخلايا المتعادلة ، الخلايا الحمضية و الخلايا الملتهمة الكبيرة .

كذلك تشير النتائج ان الالتهابات الرئوية أدت الى حدوث زيادة معنوية في الترانسامين امينيزمس (AST-AIt) جاما امينو ترانس امينيز (ggt) مستوى الجلبيكوز في السيرم ، البوريا ، الكرياتينين الفوسفور وزيادة غير معنوية في مستوى انزيم الفوسفاتيز القاعدي والكتك ديهيدروجينيز (LDH) والماغنسيوم كما ان الالتهابات الرئوية أدت الى نقص معنوي في البروتين الكلي ، الزلال ، الجلوبيولين الكلي ، الصوديوم والبوتاسيوم وهذا النقص استمر لمدة اسبوعين بعد إيقاف .

كما تقدم يتضح ان استخدام الفلوروفينكول والجنتاميسين أدى الى السيطرة على مشاكل الالتهابات الرئوية وأدت الى عودة وظائف الكبد والكلي وصورة الدم لوضعها الطبيعي .