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SOME BACTERIOLOGICAL AND MYCOLOGICAL STUDIES ON SHEEP PNEUMONIA AT ASSIUT GOVERNORATE

(With 2 Tables)

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(Received at 23/9/1996)

بعض الدراسات البكتريولوجية والفطرية على الالتهابات الرئوية
فى الأغنام فى محافظة أسيوط

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أجريت تلك الدراسة على عدد ٦٥ من الأغنام المصابة بالالتهابات الرئوية وقد تم فحص ٦٥ عينة مأخوذة من الجزء العلوى من الجهاز التنفسى وكذلك ١٩ جزء من رئة أغنام مصابة وذلك لزراعتها على الأوساط البكتيرية والفطرية المختلفة . ولقد وجد أن الباستريلا مالتوسيدا بنسبة (١٥,٤ % ، ٤٢,١ %) والسيدومونس ايروجينوزا (٦,٢ % ، ١٠,٥ %) هى أكثر الميكروبات التى تم عزلها كما تم عزل الميكروب القولونى والكلسيلا نيمونيا والمكور العنقودى الذهبى والاسبرجيلاس بصورة نقية أو مختلطة. تم إجراء اختبار الحساسية ووجد أن الكلورامفينيكول ، الجنتاميسين ، هى أكثر المضادات الحيوية تأثيراً على مسببات المرض البكتيرية.

SUMMARY

This study was carried out on 65 sheep suffering from severe Pneumonia. A total of 65 nasal Swabs and 19 pieces pneumonic lungs were collected for culture on different media For the two types of specimens., *Pasteurella multocida* (15.4 % and 42.1 %) and *Pseudomonas aeruginosa* (6.2% and 10.5%) were the most frequent isolated organisms respectively. Other organisms were also recognised *Eseherichia Coli*, *Klebsiella Pneumoniae*, *Staphylococcus aureus* and *Asperigillus* species either in pure or mixed culture. The bacterial isolates were highly Sensitive to chloramphenicol and gentamycin.

Key words: Sheep-Pneumonia-Bacteria-Fungus.

INTRODUCTION

Respiratory disorders specially pneumonia, represent one of the most important diseases of sheep, specially lambs, which cause great economic losses .

The main causes of sheep pneumonia are bacteria, fungi and viruses .Whereas poor hygeinic measures and climatic disorders are the most predisposing factors to infection.(Biberesten, et al, 1967; Rahman and Iyer, 1979; Hafez, et al, 1991 and Elyas, 1993).

Pasteurella sp. (*P. multocida* and *P. haemolytica*) *Pseudomonas* sp. and *Klebsiella pneumoniae* are the important bacterial causes of sheep pneumonia (Martin, 1983 and Quinn, et al, 1994).

Asperigillus sp, are the main cause of fungal pneumonia in sheep (Kamil and Parihar. 1991).

The aim of this study, was to detect the main bacteriological and mycological causes of sheep pneumonia in Assiut Governorate and determine the antibiogram of the isolated bacteria in order to reach an available and specific treatment.

MATERIAL and METHODS

65 of clinically pneumonic sheep were used in this study from different farms located at Assiut Governorate, 19 sheep of them were dead or emergency Slaughtered.

Clinical Examination :

Animals of the present work were subjected to clinical examination. This include recording the clinical signs, body temperature, pulse and respiratory rate .

Samples :

A total of 65 nasal swabs were collected as well as 19 sample pieces of severely affected lungs. The samples were taken under aseptic precautions and sent without delay for bacteriological and mycological examination.

Bacteriological and Mycological examination :

Nasal swabs were inoculated into nutrient broth and incubated at 37 c for 24 hour and then subcultured onto the following media: 5% sheep blood agar and MacConkey agar at 37 c for 24- 48 hours as well as Sabouraud's glucose agar which was incubated at 25 c for 5 days. The surface of the lungs specimen was sterilized with a hot spatula, then with steril platinum loop to be inoculated in the previously mentioned media . The produced colonies were identified by its morphology, pigment production,

biochemical activities and its pathogenicity to laboratory animals according to Baily and Scott (1974). For mycological identification, the produced colonies on Sabouraud's media were transferred to slant agar and then to plates agar for isolation and identification according to Conan *et al* (1971); Ellis (1976); and Kamil and Parihar (1991).

Antibiotic Sensitivity test for bacterial isolates was done by the diffusion method using antibiotic discs: Ampicillin (10mg), kanamycin (30mg) chloramphenicol (30mg), erythromycin (15mg), Gentamycin (10mg), tetracycline (30mg) Duracef (30mg) and Netilemycin Sulfate (30mg) according to the method described by (Cruickshank, *et al*, 1975).

RESULTS

The main clinical signs were rise of body temperature (39.5-40.1C), depression which appeared with the ear drop and increased eye and nasal discharge, in some cases presence of mucopurulent nasal discharge, loss of appetite and acceleration of respiration (40-50/min).

By auscultation, Exaggerated vesicular sounds, moist rales were evident with frictional sounds in some cases. The post-mortum findings included congestion of the lung accompanied with heavy fibrinous, greyish or yellowish exudate within the bronchi. In some cases, greyish-white abscesses with offensive odours was detected and sometimes Pulmonary odema with red hepatization was present.

The most important bacterial and mycotic isolates of the nasal swabs and infected lungs of the pneumonic sheep are shown in table (1). The antibiogram of the bacterial isolates is demonstrated in table (2).

DISCUSSION

Respiratory diseases in sheep and in particular pneumonia constitute one of the major causes of morbidity and mortality in sheep especially lambs.

It is well known that severe forms of pneumonia is the result of interaction of more infectious agents under the influence of physical stress (Rahman and Iyer 1977 and Martin, 1983).

The results recorded in table (1) revealed that *Pasteurella multocida* was the main bacterial causes of sheep pneumonia. Their level were 26.2% in nasal swab and 52.6% in the infected lungs. These results almost agreed with those mentioned by Hafez, *et al*, 1991 and Elyas (1993).

Martin (1983) mentioned that infection by *Pasteurella multocida* would lead to subserous haemorrhage in the nasal cavity, trachea and larynx as well as pulmonary congestion and oedema and purulent foci in the lung with serofibrinous pleurisy were present. These P.M observations were in accord with our results.

E. coli, *Klebsiella pneumoniae*, *Pseudomonas aeruginosa* were also isolated from both nasal swabs and infected lungs either in mixed or pure form. Similar findings were reported by Biberstein, et al. (1967); and Vyas et al. (1984).

These organisms are known as environmental pathogens and they are frequently encountered in both upper and lower respiratory tract specially in sheep housed at bad hygienic condition. Quinn, et al. (1994), recorded that *Klebsiella pneumoniae* and *Pseudomonas aeruginosa* cause pneumonia and lung abscesses in sheep.

Mycotic pneumonia in some cases is very dangerous due to lack of quick laboratory diagnosis and usually pneumonia is produced as the result of mixed infection with bacteria. In this study, *Aspergillus* SP. (*Asper. flavus*, *Asper. niger* and *Asper. Terrus*) were isolated from 27 % of nasal swabs and 21% of the infected lungs of pneumonic sheep. These results are in agreement with those mentioned by Kamil and Parihar. 1991 and Hafez, et al. (1991).

No bacterial or Mycotic species were isolated from 3 affected lungs (Table 1) which may be due to other causes such as *Mycoplasma* or virus.

The study of antibiogram of the isolated bacterial species yields a good idea about the antibiotic of choice for proper treatment. In this investigation, most of the bacterial isolates were highly sensitive to chloramphenicol, gentamycin, and slightly sensitive to kanamycin and duracef.

From this study, it is concluded that the isolation and identification of microbial agent of sheep pneumonia and the suitable treatment assisted by efficient hygienic measures are very essential to reduce losses of sheep breeding specially lambs.

REFERENCES

- Baily, W.R. and Scott, B.G. (1974): Diagnostic microbiology, isolation, identification of pathogenic micro-organism. 4th Ed. The mosby Comb. Saint Leuais.
- Biberstein, E.L.; Nishets, D.L. and Thompson, D.A. (1967): Experimental pneumonia in sheep J. Comp. pathology, 77: 181-192.

- Conan, N.F.; Smith, D.T.; Baker, R.D. and Callway, J.L. (1971):* Manual of clinical Mycology 3rd Ed Saunders. Philadelphia.
- Cruickshank, R.; Duguid, J.; Marmion, B. and Swain, R. (1975):* Medical Microbiology 12th Ed. Churchill Livingstone .
- Ellis, M.B. (1976):* More Dematiaceus Hyphomycetes Comm. Mycol. Inst. kew, surrey, England. (mentioned by Elyas, A.H. 1993).
- Elyas, A.H.(1993):* Some studies on sheep pneumonia of bacterial and Fungal origin Assiut Vet. Med. J. Vol. 29, No. 58, 89-94.
- Hafeez, A.M.; Razig, S.A.; EL-Amrousi S. and AL HENDI A.B. (1991):* Respiratory diseases occurring in farm animals in the Estern province of Saudi ARabia . Assiut Vet. Med. J. Vol. 24. No. 48, P. 188-196.
- Kamil S .A. and .Parihar N.P(1991):* Pathology of mycotic pneumonia in sheep . Indian Journal of animal Sciences 61 (1) 13-18 .
- W.B .Martin (1983):* Diseases of sheep. Blachwell Scientific Publications. London Edinburgh Bodton.
- Quinn, P.J.; Carter, M.E.; Markey, B.K. and Carter, G.R. (1994):* clinical Veterinary microbiology Wolfe-Virginia-U.S.A.
- Rahman, T. and Iyer, P.k.R.(1979):* Studies on pathology of ovine pneumonias Indian Vet Journal, 56. 455-461.
- Vyas, U.K.;Arya, P.L. and Sharma, C.D (1984):* Sheep pneumonia in Arid zone of RaJasthan. Indian Journal of animal Science, 54., 459-462.

Table (1) : Types and number of Micro - organisms isolated from infected sheep.

No	Micro - organisms	Nasal Swabs (65)		Infected Lungs (19)	
		No	%	No	%
1	<i>Pasteurella multocida</i>	10	15.4 %	8	42.1%
2	<i>E. coli</i>	21	32.3%	1	5.3%
3	<i>pseudomonas aeruginosa</i>	4	6.2 %	2	10.5%
4	<i>Klebsiella Pneumoniae</i>	4	6.2%	1	5.3%
5	<i>staph. aureus</i>	3	4.6%	--	--
6	<i>Asperigillus niger</i>	3	4.6%	--	--
7	<i>Asperigillus terrus</i>	5	7.7%	--	--
8	<i>Past - multocida + E. coli + Asper. flavus</i>	7	10.7%	2	10.5%
9	<i>Pseudomonas aeruginosa + E. coli + staph aureus.</i>	5	7.7 %	2	10.5%
10	<i>Klebsiella pneumoniae + Asper. niger</i>	3	4.6%	--	--
11	No growth			3	4.6
	Total	65	100%	19	100%

Table (2) : Antibiogram of bacterial isolates.

NO	Micro-organisms	Ampicillin	chloram-phenicol	erythrom -ycin	Gentamycin	Kanamycin	Duracef	tetra-cycline	Netilemycin sulfate
1	<i>Pasteurella multocida</i>	+	++	+	+++	+	+	++	+
2	<i>Pseudomonas aeruginosa</i>	+	+	+	++	++	+	++	+
3	<i>Klebsiella pneumoniae</i>	-	++	-	+++	++	+	+	+
4	<i>E. coli</i>	+	++	+	+++	++	+	+	+
5	<i>Staph. aureus</i>	+++	+++	+	++	+	++	+	+