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RESPIRATORY DISEASES OCCURRING IN FARM ANIMALS IN THE EASTERN PROVINCE OF SAUDI ARABIA

I- Analytical Study

(With 9 Tables)

By

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(Received at 13/3/1990)

الأمراض التنفسية في حيوانات المزرعة بالمنطقة الشرقية للمملكة العربية السعودية

١- دراسة تحليلية

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بالفحص الاكلينيكي والعملي ثبت أن عترة الباستريلا هي السبب الرئيس لأمراض الجهاز التنفسي لعدد ٧٩٩ أغنام ، ٨٨٢ ماعز، ٨٦ ماشية، ٦٨ جمال بالمنطقة المحيطة بكلية الطب البيطرى والثروة الحيوانية بالهفوف بعد أن وجد أن هناك أسباب أخرى تسبب الاصابة بالأمراض التنفسية وسجلت أعلى معدلات الاصابة في فصل الشتاء وكذلك خلال الشهور مارس / ابريل والمصاحبة عادة لهبوب العواصف كما وقد نوقش علاقة العمر ونوع الحيوان بنسبة حدوث الاصابة.

SUMMARY

Total number of 799 sheep, 882 goats, 86 cattle and 68 camels suffering from respiratory tract affections constituted the material for this analytical study which covered the 4 seasons of the year, 1987.

Clinical examinations were carried out in the Veterinary Teaching Hospital and in some farms at Al Hasa, Eastern Province of Saudi Arabia.

Rresults revealed that Pasteurella spp. were the main causative agent in the majority of cases. However, other causes which may include viruses, mycoplasma, klebsiella, chlamydia and others may have been responsible for the different types of pneumonia and pneumoenteritis observed in this region but could not be isolated under routine and field conditions which dominated this investigation. Further studies, therefore, appear necessary. A higher incidence of infection was observed during winter time and also during stormy months (March/April) possibly associated with an environmental stress factors during these months. Other variations in incidence in relation to different age groups and animal species are presented and discussed.

INTRODUCTION

Respiratory diseases among farm animals varying from snuffles to quite serious pneumonia were reported by many investigators and are world-wide. These diseases represent important problems confronting animal production and usually result from the action of many agents.

This report presents the accumulation of information concerning the distribution of respiratory diseases in animals received in the Veterinary Teaching Hospital, King Faisal University, Al Hasa Estern Province, Saudi Arabia during the year 1987.

MATERIAL and METHODS

A total number of 665 sheep, 344 goats, 61 cattle and 51 camels suffering from respiratory tract diseases were presented at the Veterinary Teaching Hospitl during the period from January to December 1987. Other cases diagnosed as pneumoenteritis were also received comprising 134 sheep, 102 goats, 25 calves and 17 camels, during thesame period. Cases of contagious pleuropneumonia were diagnosed clinically in 436 goats of different breeds. Numbers and age disribution among different species are presented in tables (1-9).

Clinical examination was carried out and signs were traced and hence recorded for each case. Nasal swabs from selected cases were submitted for bacteriological examination.

RESULTS

Results are presented in tables (1-9).

Table (1) Numbers of cases of ovine Respiratory tract diseases from January to December 1987

Age / Date	< 1 Yr.	1-2 Yrs.	2-3 Yrs.	> 3 Yrs	Total	%
Jan.	17	14	12	14	57	8.57
Feb.	6	6	11	7	30	4.51
Mar.	7	5	7	20	39	5.86
Apr.	15	26	19	5	65	9.77
May.	11	18	22	11	62	9.32
Jun.	7	20	21	21	69	10.38
Jul.	14	11	13	14	52	7.82
Aug.	15	11	5	7	38	5.71
Sep.	12	14	8	6	40	6.02
Oct.	8	11	10	4	33	4.96
Nov.	13	15	20	5	53	7.97
Dec.	19	35	64	9	127	19.10
Total	144	186	212	123	665	
%	21.65	27.97	31.88	18.50		

DISCUSSION

Sheep :

Respiratory affection between sheep 2-3 years age category reached 31.88%. In December, the percentage of affection was relatively as high as 19.10% (Table 1). Surveys of pneumonia made on age goups of sheep were variable as recorded by HUGERFORD (1975) where it reached between 10-50% in sheep of three years age of old.

Carefully planned surveys for identification of cases and incidence in other parts of the Kingdom of Saudi Arabia appear necessary.

In this investigation laboratory results revealed that Pasteurella spp. were the main causative agents (80.6%). The rest (19.4%) may be listed under bacterial and/or other microbiological agents. It is noteworthy that few cases (0.45%) proved to be due to lungworm infestation in which case concurrent bacterial infection is not unlikely. There is apparent need for further studies to clear up the primary and secondary pathogens. However, our clinical observation suggest that Mycoplasma spp., Klebsiella spp., Chlamydia spp., Myxovirus, Parainfleunza 3 (PI3) and others may be involved. Clinical examination may support such a view as some individual cases showed consolidation in the lungs with loud bronchial tones detected by auscultation. Such a clinical finding may reflect an interstitial type of pneumonia caused by viruses (CUTLIP & LEHMKUHL, 1982 and BLOOD et al., 1983).

In sheep, on the other hand there were 134 cases in different age groups (Table 2) suffering from pneumoenteritis. It is noticeable that in the months of January and April the highest percentage of infection was recorded. It is reasonable to speculate that infection with some specific infective agents was responsible for causing both pneumonia and enteritis in sheep in the same animal. In some individuals (9.7%) of this group, heavy infection with coccidia was diagnosed. It is apparent, however, that other agents may also be incriminated.

Table (2): Number of cases of ovine pneumoenteritis from January to December 1987.

Age / Date	<1 Yr.	1-2 Yrs.	2-3 Yrs.	>3 Yrs.	Total	%
Jan.	7	-	5	7	19	14.18
Feb.	6	-	-	-	6	4.48
Mar.	6	1	-	2	9	6.72
Apr.	16	2	-	-	18	13.43
May.	13	-	-	-	13	9.70
Jun.	11	-	-	-	11	8.21
Jul.	4	-	-	-	4	2.99
Aug.	6	-	-	-	6	4.48
Sep.	8	2	-	-	10	7.46
Oct.	11	-	2	3	16	11.94
Nov.	7	2	1	-	10	7.46
Dec.	5	7	-	-	12	8.96
Total	100	14	8	12	134	
%	74.63	10.45	5.97	8.96		

Goats :

Table (3) summarizes the number of goats affected with pneumonia. The disease showed the highest percentages in individuals below one year of age (28.2%) and 2-3 years (26.74%). The peak of incidence of infection was observed during the month of March. Pneumonia in goats may be due to a variety of causes (HUNGERFORD, 1975). In this investigation auscultation was a valuable routine aid for diagnosis of pneumonia in goats. The area of lung tissue affected could be outlined. There were increased vessicular murmurs in many cases and moist rales were evident in many clinical cases of bronchopneumonia and bronchial secretions were also increased. When consolidation took place, increased audibility of the heart sound was noticed. some cases showed frictional sounds indicating that the pleura was involved.

Moreover, 102 goats were suffering from pneumoenteritis (Table 4). It is noticeable that the month of April recorded the highest percentage of infection and it reached 69.61% in goats one year of age or younger.

Post-mortem examination of advanced cases not responding to treatment revealed a clear acute fibrinous bronchopneumonia accompanied sometimes by varying degree of pleurisy, a picture simulating that was described by MOULTON (1980). The picture simulates that of ovine pasteurellosis in most cases. On the basis of clinical evidence, it appeared that Mycoplasma mycoides var. capri hand been the suspected causative agent of the contagious pleuropneumonia seen in goats (Table 5), but this could not yet be confirmed by islation of the organism.

Table (3) Numbers of cases of caprine respiratory tract diseases from January to December 1987

Age / Date	<1 Yr.	1-2 Yrs.	2-3 Yrs.	>3 Yrs.	Total	%
Jan	8	6	6	10	30	8.72
Feb.	8	5	9	17	39	11.34
Mar.	21	11	7	15	54	15.70
Apr.	6	13	10	-	29	8.43
May.	8	6	7	4	25	7.27
Jun.	-	3	10	9	22	6.40
Jul.	7	4	6	5	22	6.40
Aug.	2	4	3	3	12	3.49
Sep.	6	6	6	2	20	5.81
Oct.	4	5	6	3	18	5.23
Nov.	14	6	7	2	29	8.43
Dec.	13	14	15	2	44	12.79
Total	97	83	92	72	344	
%	28.20	24.13	26.74	20.93		

Table (4) Numbers of cases of caprine pneumoenteritis from January to December 1987

Age / Date	< 1 Yr.	1-2 Yrs.	2-3 Yrs.	>3 Yrs.	Total	%
Jan.	2	6	-	3	11	10.78
Feb.	7	-	6	-	13	12.74
Mar.	4	1	1	2	8	7.84
Apr.	22	-	-	-	22	21.57
May.	7	-	-	-	7	6.86
Jun.	4	-	-	-	4	3.92
Jul.	4	-	-	-	4	3.92
Aug.	1	-	-	-	1	0.98
Sep.	8	-	-	5	13	12.75
Oct.	7	2	-	-	9	8.82
Nov.	4	-	-	5	9	8.82
Dec.	1	-	-	-	1	0.98
Total	71	9	7	15	102	
%	69.61	8.82	6.86	14.70		

Table (5) Numbers of cases of caprine pleuropneumonia from January to December 1987

Age / Date	< 1 Yr.	1-2 Yrs.	2-3 Yrs.	>3 Yrs.	Total	%
Jan.	2	5	12	26	45	10.32
Feb.	7	21	5	7	40	9.17
Mar.	14	26	10	-	50	11.47
Apr.	25	26	20	9	80	18.35
May.	8	14	8	1	31	7.11
Jun.	7	10	9	3	29	6.65
Jul.	7	3	5	1	16	3.67
Aug.	2	3	6	2	13	2.98
Sep.	1	13	5	4	23	5.28
Oct.	3	23	3	-	29	6.65
Nov.	7	6	6	-	19	4.36
Dec.	12	27	21	1	61	13.99
Total	95	177	110	54	436	
%	21.79	40.60	25.23	12.39		

Cattle :

Number of cattle suffering from respiratory tract diseases where affections reached the highest percentage in months between February and April (Table 6). The group of animals below one year age was 10 animals occurred mainly in February. Laboratory results revealed also that Pasteurella spp. were the main findings to be responsible for causing such signs. It seems that in these two months the animals

may face varying degrees of weather stress in the Kingdom in the term of sandy storms. The same was true in similar conditions as in sheep and goats. Similarily other causes may be listed under other microbiological causes. Clinical pictures supported the view that viruses might be the primary cause in some cases where absence of toxaemia as compared with those suffering from bacterial pneumonia was evident. It is advisable under these conditions for trials to isolate viruses as PI3 and/or others as these agents were currently reviewed in the literature as main causative agent for the wide spread occurrence to cause pneumonia in calves and yearlin (IRWIN et al., 1979 and PIRIE, 1984).

Regarding pneumoneteritis, 25 sick calves (Table 7) the majority belongs to farms around Al-Hasa region. In our view and according to the restricted laboratory aids, the disease may be due to Pasteurella multocida (15 cases) occurring in two periods March and November which may be considered of environmental stress (e.g. sandy storms). The report presented by BAIN (1963) revealed that the disease was recorded chiefly in animals exposed to similar stress in Southern Asia. Other causes may be also incriminated and needs further and thorough laboratory investigations.

Camels :

In this investigation pneumonia in camels (Table 8) was seen mainly in the form of acute or chronic bronchopeumonia affecting chiefly animals above 5 years of age (50.98%). According to preliminary bacteriological findings it appear that Pasteurlla multocida was the probable cause of many cases of pneumonia in camels. Clinically, the temprature of affected camels was found elevated to 39.5 - 40.5°C.

On auscultation the area of the lung affected was quite large and loud rales were audible in some cases with frictional sounds. Excessive nasal-discharge accompanied by froth at the mouth commisures were observed. In the early stage of the disease increased vesicular sounds and bronchial tones were audible. Some camels showed marked dyspnoea with expiratory grunt together with the development of hot painfull swellings about the throat possibly indicating involvement of lymph nodes in the head and neck region. In our opinion prolonged transportation through the desert and general fatigue may be predisposing factors to induce this and other diseases. It appears that the occurrence of pneumonia in camels needs thorough epidemiological studies especially in herds subjected to environmental stress.

Alimentary system involvement concurrently with cases of pneumonia was observed in 17 cmels where diarrhoea was noticed (Table 9). The course of the disease in this group was relatively longer suggesting a non septicaemic syndrome in which the occurrence of diarrhoea is probably due to other causes.

Table (6) Numbers of cases of bovine respiratory tract diseases from January to December 1987

Age / Date	< 1 Yr.	1-2 Yrs.	2-3 Yrs.	>3 Yrs.	Total	%
Jan.	4	2	1	-	7	11.48
Feb.	10	-	2	-	12	19.67
Mar.	3	-	-	8	11	18.03
Apr.	-	1	5	10	16	26.23
May.	-	-	-	-	-	-
Jun.	-	-	-	-	-	-
Jul.	-	-	-	-	-	-
Aug.	-	-	-	3	3	4.92
Sep.	-	-	-	1	1	1.64
Oct.	1	2	1	1	5	8.20
Nov.	-	-	1	-	1	1.64
Dec.	1	1	1	2	5	8.20
Total	19	6	11	25	61	
%	31.15	9.84	18.03	40.98		

Table (7) Numbers of cases of bovine(calves) pneumoenteritis from January to December 1987

Age / Date	< 1 month	1-2 m.	2-3 m.	3-4 m.	4-12 m.	Total	%
Jan.	3	2	-	-	-	5	20
Feb.	-	-	-	-	-	-	-
Mar.	-	-	-	4	2	6	24
Apr.	2	-	-	-	1	3	12
May.	-	-	-	-	-	-	-
Jun.	-	-	-	-	-	-	-
Jul.	-	-	-	-	-	-	-
Aug.	-	-	-	-	-	-	-
Sep.	-	-	-	-	-	-	-
Oct.	-	-	-	-	-	-	-
Nov.	2	4	3	-	-	9	36
Dec.	1	-	-	-	1	2	8
Total	8	6	3	4	4	25	
%	32	24	12	16	16		

Table (8) Numbers of cases of camel respiratory tract diseases from January to December 1987

Age / Date	< 1 Yr.	1-2 Yrs.	2-5 Yrs.	> 5 Yrs.	Total	%
Jan.	3	2	-	5	7	13.73
Feb.	1	-	1	-	2	3.92
Mar.	-	-	-	-	-	-
Apr.	-	-	3	3	6	11.76
May.	-	-	1	3	4	7.84
Jun.	-	-	-	3	3	5.88
Jul.	-	-	-	-	-	-
Aug.	-	-	-	3	3	5.88
Sep.	1	1	7	5	14	27.45
Oct.	-	-	-	1	1	1.96
Nov.	-	-	-	2	2	3.92
Dec.	4	-	1	4	9	17.65
Total	9	3	13	26	51	
%	17.65	5.88	25.49	50.98		

Table (9) Numbers of cases of camel pneumoenteritis from January to December 1987

Age / Date	< 1 Yr.	1-2 Yrs.	2-5 Yrs.	> 5 Yrs.	Total	%
Jan.	3	-	-	-	3	17.65
Feb.	2	-	-	-	2	11.76
Mar.	-	-	-	-	-	-
Apr.	1	-	-	-	1	5.88
May.	1	-	-	-	1	5.88
Jun.	-	-	-	-	-	-
Jul.	-	-	-	-	-	-
Aug.	-	-	-	-	-	-
Sep.	3	-	-	-	3	17.65
Oct.	-	-	-	-	-	-
Nov.	-	-	-	-	-	-
Dec.	5	-	-	2	7	41.18
Total	15	-	-	2	17	
%	88.24	0.00	0.00	11.76		

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