

SOME STUDIES ON SHEEP PNEUMONIA OF BACTERIAL AND FUNGAL ORIGIN

(With 2 Tables)

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دراسة المسببات للالتهابات الرئوية في الأغنام

أصل جلمى بالياس

تم فحص عدد ٢٠ عينة مأخوذة من الجزء العلوى من الجهاز التنفسى (الحلق) لحملان صغيره سليمه ظاهرياً وقد عزلت الميكروبات الآتية :-
ستافيلوكوكس ابيدرمس (٢٣ %) ، ستافيلوكوكس اوريس (٢٦ %) ، انتراكويدس (٢٣ %) ،
الميكروب القولونى (١٦ %) وباستريلا ملتوسيدا (٣ %) . كما تم فحص ٦٠ عينة مأخوذة من رئة
حملان مصابه بالتهابات الرئوية وقد أمكن عزل الميكروب والفطريات المسببه لعدد ٤٨ عينة وكانت
كالآتى :-

الميكروب القولونى (٣١٣ %) ، سفافيلوكوكس اوريس (١٥٦ %) ، ستافيلوكوكس ابيدرمس
(١٢٥ %) ، كورنى باكتريم بيوجينس (٧٨ %) ، كورنى باكتريم أوفس (٧٨ %) ، ستريتوكوكس
نيمونيا (٧٨ %) ، سيدومونس ايرجينوسا (٤٧ %) ، كلبسيلا نيمونيا (٤٧ %) ، باستريلا
ملتوسيدا (٣١ %) ، اسبرجيس فلافس (٣١ %) واسبرجيس ثيريس (١٦ %) . لم نتمكن من عزل
ميكروبات من ١٢ عينة رئويه ذات أعراض باثولوجيه ومحتمل اصابتها بأمراض فيروسيه أو
ميكوبلازما .

SUMMARY

A total of 31 bacterial isolates were recovered from the throat of 20 apparently healthy Lambs. The isolates included *Staphylococcus epidermidis* (32%), *Staphylococcus aureus* (26%), *Anthraxoids* (23%), *E. coli* (16%) and *Pasteurella multocida* (3%). Isolates from 60 affected lungs included *E. Coli* (31. 3%), *Staphylococcus aureus* (15. 6%), *Staph. epidermidis* (12. 5%), *Corynebacterium pyogenes* (7. 8%), *Corynebacterium ovis* (7. 8%), *Streptococcus pneumoniae* (7. 8%), *Pseudomonas aeruginosa* (4. 7%), *Klebsiella pneumoniae* (4. 7%), *Pasteurella multocida* (3. 1%), *Aspergillus flavus* (3. 1%) and *Asperillus terrus* (1. 6%) Twelve diseased lungs gave no bacterial or fungal isolates. The causes of lung affections were discussed.

INTRODUCTION

Outbreaks of respiratory infection either alone or as complication of another disease have reached serious proportions in some areas of the world. Respiratory affection cause heavy economic losses. Since affection includes sheep of all ages and types, it is thus considered as the main cause of deaths among lambs all over the world (VELTER et al., 1960 and BIBERRSTEIN et al., 1967).

Respiratory infection in sheep is caused by several agents such as bacterial, viral, fungal or parasitic. It is also accepted that other factors such as climate husbandary, plane of nutrition and parasite are important predisposing factors to bacterial or viral infection. however, the exact cause of ovine pneumonia is still rather conflicting and confusing. It is sometime attributed to viral origin but often bacterial causes are considered either the original causative agent or as secondary invador which would complicate the condition.

Several studies on the causes of ovine pneumonia have been reported from various parts of the world (OGNYANOVE, 1962; ROMVARY, 1962; RAMACHANDRAN & SHARMA, 1969; MISRA et al., 1970; SHEGIDEVICH et al., VYAS et al., 1984; MOHAN & UZOUKW, 1985; PFEFFER et al., 1985; RICHARD et al., 1986; MALONE et al., 1988 and KAMIL and PARIHAR, 1991).

Hence the present work aimed to investigate the bacterial and fungal causes of respiratory affection in sheep under local

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environmental conditions. Isolation of such organisms that normally inhabit the nasal tract of apparently healthy sheep was also aimed.

MATERIAL AND METHODS

During winter 1991-1992 several affection were noticed in El-Hawatka and El-Ghorieb sheep breeding stations with high morbidity. The symptoms included purulent nasal discharge, slightly elevated body temperatures, variation in respiratory movement. accompanied with general depression and loss of appetite.

Sixty lambs of 6-10 weeks were subjected to post-mortem examination either dead (36) or slaughtered (24). The P.M. findings were purulent foci in the lung with red hepatization in some cases and serofibrinous pleurisy in others. Pulmonary congestion. oedema and haemorrhages on the serous surface of the thorax were also noticed. Parts of the lung showing the apparent pathological changes were sent to the laboratory in a sterile container with a minimum of delay. Blood smears were taken. stained by Gimsa stain for bipolar organisms.

Swabs were taken from the throat of apparently healthy lambs for normal bacterial and fungal flora.

Bacteriological and mycological examination:

The surface of the affected area was seared with hot spatula, then was opened with a sterile scalpel. The material was taken with a sterile platinum loop and inoculated onto blood agar and (MacConkey) agar plates. The inoculated plates were incubated at 37°C for 24-48 hrs. Suspected colonies were subjected for complete identification by studying its morphological characters, biochemical reactions and if necessary its pathogenicity to laboratory animals according to BAILEY and SCOTT (1962) and CRUICKSHANK *et al.*, (1975).

Pasteurella species were identified morphologically, biochemically and its pathogenicity to mice.

Sabouraud's glucose agar plates were also inoculated for fungi and yeast, incubated at 25°C for 5 days with interval examination.

The colonies of growing fungi were transferred to slant agar and then to plates agar for identification according to CONANT *et al.*, (1971) and ELLIS (1971) and (1976).

RESULTS

The results are tabulated in tables 1 & 2.

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DISCUSSION

From this study, only few types of bacteria could be isolated from apparently normal lambs. These types were *Staphylococcus epidermidis* (32%), *Staphylococcus aureus* (26%) Anthracoids (23%) *Pasteurella multocida* (3%). *E coli* (16%); no fungal species could be recovered. These results are nearly similar to those reported by BIBERSTEIN and KENNEDY (1959). To the best of our knowledge, no more studies were done on the normal bacterial flora of the throat of lambs. It is noticed that at least 55% of these types were non pathogenic (*Staph. epidermidis* and anthracoid). On the other hand a large variety of bacterial types could be recovered from 48 samples lung lesions of diseased lambs.

These types were *E coli* (31.3%), *Staphylococcus aureus* (15%), *Staphylococcus epidermidis* (12.5%), *Corynebacterium pyogenes* (7.8%), *Corynebacterium ovis* (7.8%), *Streptococcus pneumoniae* (7.8%), *Pseudomonas aeruginosa* (4.7%), *Klebsiella pneumoniae* (4.7%), *Aspergillus flavus* (3.1%), *Aspergillus terreus* (1.6%). These results are nearly similar to those reported by MISRA et al. (1970); STAMATIN (1970). VYAS et al. (1984); SHEGIDEVICH et al. (1983); EL-AMROUSI et al. (1986) and KAMIL & PARIHAR (1991). These authors isolated several bacterial species including *Pasteurella*, *Streptococcus pneumoniae*, *Corynebacterium pyogenes*, *Streptococcus faecalis*, *Staphylococcus aureus*, *haemophilus*, *coliform*, *Pseudomonas aeruginosa* and others from respiratory affection in different frequencies.

However, no bacterial species were isolated from another 12 lung lesions which may be due to other causes than bacterial agents i.e virus or mycoplasma.

From the aforementioned study, it is shown that about 60% of the isolated strains from the diseased lungs were of the same types as those isolated from healthy sheep. Therefore it appears that the normal bacterial flora plays an important role in causing respiratory infection in sheep.

The final diagnosis of pneumonia in sheep and accordingly its treatment is usually difficult due to lack of laboratory facilities and the multiplicity of suspected aetiological agents. Further investigations are highly recommended to clarify other possible causes as mycoplasma proliferative, interstitial pneumonia, viral pneumonia, sheep influenza and the like.

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Table 1: Incidence and frequency of bacterial flora isolated from 20 apparently healthy lambs.

Organism	No. of strain	Percentage
<u>Staphylococcus epidemidis</u>	10	32%
<u>Staphylococcus aureus</u>	8	26%
<u>Anthracoïds</u>	7	23%
<u>Pasteurella multocida</u>	1	3%
<u>E.coli</u>	5	16%
Total	31	100%

Table 2: Incidence and frequency of bacterial and fungal species isolated from affected lung of 60 lambs.

Organism	No. of strain	Percentage
<u>E.coli</u>	20	31.3%
<u>Staphylococcus aureus</u>	10	15.6%
<u>Staphylococcus epidemidis</u>	8	12.5%
<u>Cornebacterium pyogenes</u>	5	7.8%
<u>Cornebacterium ovis</u>	5	7.8%
<u>Streptococcus pneumoniae</u>	5	7.3%
<u>Pseudomonas aeruginosa</u>	3	4.7%
<u>Klebsiella pneumoniae</u>	3	4.7%
<u>Pasteurella multocida</u>	2	3.1%
<u>Aspergillus flavus</u>	2	3.1%
<u>Aspergillus Terrus</u>	1	1.6%
Total	64	100%

N.B.: no isolates could be detected in 12 affected lungs.