MICROBIOLGICAL STUDIES ON LUNG INFECTION IN CALVES AT BEHERA ABATTOIR

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ABSTRACT

The study was carried for bacteriological and mycological examination of pneumonic lungs of calves from 6-20 month old slaughtered at Behera Abattoir. The examined lungs were collected from a total number of 36 calves. The gross lesions of the affected lungs were recorded followed by collection of tissue specimens.

All collected samples were inocaulted directly onto different media for isolation of baeteria and fungi. Results obtained showed that the bacteria isolated as single pathogen were staphylococcus aurus at rate of 22.2% followed by klebsiella pneumonia at rate 19.4%, Escherichia coli at rate 11.9% and streptococcus pneumonia at rate 11.1% Each of pasteurella heamolytica, and salmonella typhimurium isolated at rate 2.8%. Baeteria isolated as mixed pathogens were 6 cases harboured S. aureus and E.coli (16.6%) , 3 cases (8.3%) were due to concurrently infection of strept. Pneumonia and E.coli meanwhile one case (2.8%) showed pasteruella haemolytica and E. coli.

Antimicrobial sensitivity result. Showed that Enrofloxacin was the most effective antibiotic against bacteria followed by amoxyeillin and marbofloxaein on the different types of the isolates staph.aureus , klebsialla pneumonia , E.coli and strept pneumonia.

INTRODUCTION

Calf pneumonia can potentially be a significant economic burden to a farm due to the costs of treatment, mortalities, reduced growth rates, additional labour and housing requirements. Pneumonia in young calves may be a chronic disease with very few clinical signs apart from a dry cough and slightly increased respiratory rate the acute form of the disease usually manifests itself in an outbreak involving several calves going down with the disease within a 24 hour period fever, dullness, in appetence and coughing often combined with nasal discharge are the most common symptoms.

Enzootic pneumonia of calves is not a specific disease attributed a single etiological agent and the variety of microbiological agents that may be associated with condition.

The main causes of pneumonia are bacteria, fungi and viruses whereas poor hygienic measures and climatic disorders are the most

predisposing factors to infection **(Rohman and Iyer 1979. Hafez et al, 1991 and Elyas, 1993).**

Among the most bacterial cause of pneumonia are Escherichia coli, klebsiella pneumoniae, pseudomonas aeruginosa, streptococcus spp, staphylococcus spp, and pasteurella, **(Elyas 1993 Fodor et al., 1999 and Odendoal and Henton 1995).**

The aim of the present study is to determine the different pathogenic bacteria species and in affected lung.

MATERIAL AND METHODS

36 lung samples from 6-20 month old calves showing respiratory disorders and nasal discherge slaughtered at Behiera Abattoir were collected.

The lungs had different forms of affections such as different stages of pneumonia.

The affected parts of the lung tissue were collected directly in sterile disposable containers for bacteriological examination.

Bacterial examination:

Samples were prepared according to **Thatcher and Clark (1978)** the samples were transferred directly into sterile homogenizer flask containing peptone water and homogized for 2 minutes at 3000 rpm Aloopfull from each sample was directly inoculated into different media including nutrient agar, blood agar, Mac Conkey's agar S.S agar and Baird parker agar plates and incubated aerobically at 37 c for 24-48 hours all isolates were morphologieally studied , then identified biochemically according to **Cruickshank et al. (1975) and Collee et al. (1996).**

In vitro antimicrobial sensitivity test :

The technique was according to **Quinn et al. (1994).**

RESULTS & DISCUSSION

Pneumonia is one of the major disease frequently encountered in farm animals causing major economic losses to calves **(Caldow et al. 1993).** The economic losses from death of affected animals **(Grove- White and White (1999)** and cost of treatment and the predisposition of animals affected by neonatal pathogens to the development of other disease condition **(House 1978).** It was clear from table (1) 36 examined affected lungs were found to harbour various types of microorganisms.

The result in table (1) represented the bacteriological examination of 36 lung tissue samples of pneumonic calves.

The most prevalent member was belonging to staph. aureus and klebsiella pneumonia which were more frequently observed as the sole causative agent in an incidence of 22 .2% and 19.4% respectively and these results give a focus about the importance as the cause of pneumonia and this observation was in complete agreement with that mentioned by **Glantz et. al. (1972)** who recorded that the main organisms obtained from dead calves after suffering from respiratory syndromes were C.pyogenes, P.aeruginosa, k. pneumoniae and staph aureus, However **Samer (2001)** isolated Staphylococcus aurues at low pereentage

than our results who isolated one isolate from 52 affeeted lungs.

Streptocoecus pneumoniae were isolated from 4 samples at incidence of 11.1% as single pathogen this results agreed with **Hanaa (2007) while Samer (2001) isola**ted strept.pneumoniae from pneumonie lungs at rate of 1.92% .

Escheriehia coli is one of most important live agent of early infections in neonatel period and frequently causative agent of pneumonia. Also Escherichia coli is a part of normal intestinal flora of both human and worm blooded animal and under certain conditions, it can invade other organs as lung and eause pneumonia. **(Rauprich et al. 2000)**.

Table (1) represented the bacteriological examination of 36 lung tissue samples of pneumonic calves it revealed that E.coli was isolated from 5 samples at incidence of 13.9 % as single pathogen. This result nearly similar to result **Abd El- Fattah et. al. (1993)**. However **Samah (2004)** could isolated E.coli in higher incidence reached to 72.64%.

The least frequent microorganisms sccured from ealves suffering from pneumonic lesions were pasteurella heamolytica, and salmonella typhimurum with an incidence of 2.8% and these results were in agreement with that mentioned by **Riad (1989)**.

A total of 10 calves revealed mixed infection with an ineidenee of (27.8%) Including Staph. aureus and E.coli (16.6%), (8.3%) were due to coneurlently infection of Strept. pneumoniae and E.eoli, meanwhile (2.8%) showed Pasteurella heamolytiea and E.eoli. This gave an idea about the role played by mixed infeetion and the observation is an agreement with that mentioned by **Vaissaire et al. (1988)** who mentioned that pneumonia was produced more obviously and pneumonic lesions were more extensive in mixed bacterial infection than when a single bacterium was isolated. Rcsults of the vitro sensitivity test table (4) revealed that Enrofloxacin was the most effective antibiotic against bacteria followed by amoxycillin and marboceal on the different types of the isolates Staph. aureus, klebsialla pneumonia, E. coli and Strept pneumonia with the percentage of 75%, 66.7%, 60% and 50% respectively for enrofloxacin, 75%, 50%, 80% and 25% respectively for amoxicillin and 50%, 66.7%, 80% and 50% respectivcly for Marbofloxaein.

The high susceptibility of organisms to enrofloxacin and Marbolloxacin may bc due to the fact that they are rarely used in therapy accordingly few strains get resistance against these antibiotics.

Therefore, periodic studies on resistance levels are needed to enable selection of appropriate antibiotics to which these microorganisms have the lowest resistance **Costa et. al. (1995)**.

Table (1) : Bacteria isolated from lung of Pneumonic calves as a single culture

Types of bacteria	Lung tissues	No. of positive samples	
taphylococcus aureus	36	8	22.2
.lebsiella Pneumonia	36	7	19.4
scherichia coli	36	5	13.9
Streptococcus Pneumoniae	36	4	11.1
asteurella heamolytica	36	1	2.8
almonella typhimurium.	36	1	2.8
Total	**36**	**26**	**72.2**

Table (2) : mixed culture of bacteria isolated from Lung of pneumonic calves.

Bacteria species	Lung tissues (36)	
taph .aurous + E.coli	6	16.6
trept . pneumonia + E.coli	3	8.3
asteurella heamolytica + E. coli	1	2.8
otal	10	27.8

Table (3) : Antimicrobial susceptibility of bacterial isolates from affected lung.

Antibotic Disc	Sensitive Strain to different antibiotics							
	Staph. aureus		Klebsialla Pneumoniae		E-coli		Strept . pneumoniae	
	Total no. = 8		Total no. = 6		Total No. 5		Total No. = 4	
	No	%	No	%	No	%	No	%
Enrofloxacin	6	75	4	66.7	3	60	2	50
Amoxycillin	6	75	3	50	4	80	1	25
Gentamycin	5	62.5	3	50	2	40	2	50
Marbofloxacin	4	50	4	66.7	4	80	2	50
Ampicillin	1	12.5	1	16.7	-	-	-	-
Teteracycline	-	-	-	-	1	20	-	-

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الملخص العربى

دراسات ميكروبيولوچية فى الرئة المصابة فى العجول بمجازر البحيرة

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أجريت هذه الدراسة للفحص البكترولوچى لرئات العجول المصابة بالالتهاب الرئوى والتى يتراوح عمرها من ٦ إلى ٢٠ شهر والتى تم ذبحها بمجازر محافظة البحيرة وقد سجلت الإصابات العينية للنسيج الرئوى المتأثر بالالتهاب عند مجمع العينات من ٣٦ عجل.

كشف الفحص البكترولوچى بأن البكتريا التى عزلت منفردة كسبب مرضى كانت المكورات العنقودية الذهبية بنسبة ٢ر٢٢٪ وتليت بالكبسيللا نيومونى بنسبة ٤ر١٩٪ والأيشريشيا كولاى القصبات القولونية بنسبة ٩ر١٣٪ والاستربتوكلوس نيومونى المكورات السبحية الرئوية بنسبة ١ر١١٪ أما كلاً من البستريلا هيموليتكم والسالمونيلا تيقومبرم فقد عزلا بنسبة ٨ر٢٪.

أما البكتريا التى عزلت كأسباب مرضية مختلطة كانت الاستفيلوككوس أوريوس مع الأيشريشيا كولاى بنسبة ٦ر١٦٪ أما الاستربتوكلوس نيومى مع الأيشريشيا كولاى فقد عزلت بنسبة ٣ر٨٪ والباستريلا هيموليتكم مع الايشريشيا كولاى بنسبة ٨ر٢٪ أظهرت نتيجة اختيار الحساسية ضد الميكروبات ان الأنروفلوكساللين هو الأكثر تأثيراً على البكتريا المعزولة يتبعه الأموكسساللين والمربوفلوكساسين على البكتريا المختلفة المعزولة الاستفيلوككوس أوريوس والكبسيللا نيومونى والايشريشيا كولاى والاستربتوككس نيومونى.