

Some bacterial causes of pneumonia in camel calves at Matrouh governorate

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Abstract

The current work was conducted in three regions at Matrouh governorate, Egypt, 2012. The work included 50 camel calves of 1-10 months old, both sexes and showing the clinical signs of pneumonia. The animals were divided into two groups according to their ages, young (1-6 months) and old (7-10 months). From the total number of animals, 5 cases were slaughtered, 35 died and 10 treated. Swabs for bacteriological examination were collected from upper air passages and affected lung tissues. Bacteriological examination revealed that Gram-negative microorganisms were the most prevalent (52%) as compared with the isolated Gram-positive bacteria (48%). *E.coli* represented the highest percent of incidence (20%), while *Pasteurella multocida* was at the lowest value (4%). Various incidences were reported among the other isolated strains. The clinically diseased group responded to the planned treatment.

Key words: Bacterial flora, camel, epidemiology, pneumonia .

Introduction

Pneumonia is a major disease problem of domestic animals. Outbreaks occur in camel as well as other animal's worldwide (Al-Doughaym *et al*, 1999). Pneumonia may be caused by bacteria, viruses, parasites and fungi (Schwartz and Dioli, 1992 and Al-Ani, 2004). The economic losses due to pneumonia in camels are represented by loss weight, losses due to condemnations during meat inspection and mortalities (Al-Ani, 1990 and Mohamed *et al*, 1990). In Egypt, Farrag *et al*. (1953) reported the isolation of eight genera of bacteria from camel pneumonic lungs. Mahmoud *et al*. (1988) reported a variety of microorganisms from pneumonic lungs of camel. *Escherichia coli*, *Staphylococcus spp.*, *Klebsiella spp.*, *Pseudomonas aeruginosa*, *Actinomyces pyogenes*, and *Streptococcus spp*, are the most prevalent causes of camel pneumonia (Al-Doughaym *et al*, 1999; Al-Rawashdeh *et al*, 2000 and Al- Tarazi, 2001). Some workers studied camel pneumonia in Sudan and other parts of the world (Khan, 1970; McGrane and Higgins, 1985; Mustafa, 1992; Pavlik, *et. al.*, 2002 and Nasr, 2003). Their studies stated the seasonality in the occurrence of camel pneumonia and established the many

etiological agents responsible for the condition such as *Staphylococcus spp*, *Corynebacterium. Spp*, *Streptococcus spp*, *Klebsiella pneumoniae*, *Diplococcus pneumoniae*, *E .coli*, *Bacillus spp*, *Pasteurella spp*, *Haemophilus somnus* *Micrococcus spp*, *Actinomyces spp* and *Mycobacterium spp*. The current study was conducted to isolate and identify the types of bacterial species involved in pulmonary lesions of camel and its association with pneumonia.

Material and Methods

During the last year, the researcher Matroh found that there were varying degrees of respiratory affection among camel flocks. The total number of animals included was 50 of different ages, sexes and belonged to 3 localities in Matrouh governorate, Egypt. The work was done during 2012. Clinical observations and examination revealed that 50 animals showed pneumonia. The animals were divided into two groups according to their ages, young (1-6 months) and old (7-10 months). From the total number of animals, 5 cases were emergency slaughtered, 35 cases died and 10 treated. Gentamycin, electrolytes and dexamethazone were the drugs used in treatment. These animals were grouped as follow:

Table (1). Divisions, ages, and numbers of animals used.

Age (months)	No. of camel calves	Diseased	slaughtered	dead	Treated
Young age(1-6)	30	30		30	
Old age(7-10)	20	20	5	5	10
Total no. of animals	50	50	5	35	10

The lungs were examined by visual examination and palpation for the presence of post mortem lesions; after which samples for bacteriological investigations were collected from both normal and abnormal lungs. Samples for bacteriology were placed in polythene bags and kept ice box and taken to the laboratory (**Barrow and Feltham, 1993**). Swabs from the nose, larynx from diseased animals and samples from the affected lungs tissues from emergency slaughtered and dead animals were collected in clean plastic bags. During collection it was noted that nasal and laryngeal swabs were taken under complete aseptic conditions. Lungs of slaughtered and dead animals showing pathological changes were taken in plastic bags, placed in sterile jars. The surface of af-

ected organs was seared with hot spatula then opened with sterile scalpel. The pus material was taken with a sterile platinum loop and inoculated in the culture media for bacterial examination. Samples were collected immediately after evacuation, transferred to laboratory at the research institute, Matrouh province for direct microscopic examination, isolation and identification of microorganisms. The bacterial examination by inoculating the collected pus or lung tissues onto blood agar and (MacConkey) agar plates then the plates incubated at 37°C for 24-48 hours. Suspected colonies were subjected for complete identification. Isolates obtained were identified morphologically, culturally and biochemically according to **Cruickshank (1975)**.

Results

The results of the present work were recorded in the following tables:

Table (2). Bacterial species isolated from affected lungs of 50 camels.

Organisms	No. of strains	Percentage
<i>E. coli</i>	10	20%
<i>Streptococcus pneumoniae</i>	4	8%
<i>Pasteurella multocida</i>	2	4%
<i>Cornybacterium pyogenes</i>	8	16%
<i>Staphylococcus epidermidis</i>	5	10%
<i>Staphylococcus aureus</i>	9	18%
<i>Pseudomonas aeruginosa</i>	5	10%
<i>Klebsiella pneumoniae</i>	7	14%
Total	50	100%

Table (3). Isolated bacterial strains of different groups.

No. of cases	Age and no.	<i>E.coli</i>	<i>Strept. Pneumoniae</i>	<i>P.multocida</i>	<i>Coryn. pyogenes</i>	<i>Staph. epidermidis</i>	<i>Staph. aureus</i>	<i>Pseudo. Aeruginosa</i>	<i>K.pneumoniae</i>
		10	4	2	8	5	9	5	7
Diseased cases 50	Young age (30)	8	2	-	6	2	5	4	3
	Old age(20)	2	2	2	2	3	4	1	4
Slaughtered cases 5	Young – old(5)	--	----	----	----	----	--	----	----
		-	2	----	1	--	1	-	1
Dead cases 35	Young (30)	8	2	-	6	2	5	4	3
	Old (5)	1	-	1	-	-	1	1	1
Treated cases (10)	Young (-)	-	-	-	-	-	-	-	-
	Old (10)	1	-	1	1	3	2	-	2

Discussion

The remote breeding system of camels in Egypt, considered to be one of the major constraints that facing diagnosis of camels diseases. Our observations denote that the disease was severe and danger in young camel calves as compared with the old ones. Bacteriological findings of our study were reported in tables 2 and 3. *E.coli* was the most prevalent organism (20%) isolated from pneumonic camel calves. These results were similar to the findings of Mahmoud *et al.* (1988) and Mustafa (1992). The high isolation rate of *E. coli* correlates with the natural habitat of *E. coli*, where it can survive in fecal particles, dust and water for weeks and months (Quinn *et al.*, 1999). The incidence of *Staph. Epidermidis* and *Staph. aureus* organisms (tab.2) were 10% and 18% respectively. The organisms found incriminated in pneumonic lesions varied in severity and was often isolated in mixed cultures with other bacteria. Nasr (2003) isolated *Staphylococcus* spp. from upper and lower respiratory tract of camels showing pneumonic signs at anti and postmortem examinations. *Corynebacterium pyogenes* and *Streptococcus pneumoniae* (table 2 and 3) were among the second important pathogens involved in camel's lung infection mainly in the pyogenic lesions. This agreed with the results obtained by (Mustafa

1992 and Abubakar, 2010 *et al.*). *Corynebacterium pyogenes* were found representing (16%) of the total bacterial isolates. The organism was isolated from pyogenic lesions, grey hepatization and adhesion. In addition to *Escherichia coli* two other Gram-negative isolates were identified. These were *Pseudomonas aeruginosa* (10%) and *Klebsiella pneumoniae* (14%). The results were similar to that of (Nasr, 2003. Zubair *et al.*, 2004; El-Tigani *et al.*, 2004 and Kane *et al.*, 2005). Their results confirmed the presence of the organisms as upper respiratory tract flora and they may invade the lungs when the immunity of animals decline. *Pasteurella multocida* represents the lowest incidence (4%) of bacterial infection among pneumonic camel calves. The organism was isolated from congested lung lesions showed haemorrhage and inflammation of the lungs. Isolation of the organism was previously reported by Mustafa (1992).

The general treatment of pneumonia often requires antimicrobial therapy. The decision of antimicrobial therapy depends largely on the sensitivity of the targeted microorganisms and the pharmacokinetics of the drug to achieve the desired therapeutic concentration.

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بعض المسببات البكتيرية للالتهاب الرئوي في الجمال الصغيرة في محافظة مطروح

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الملخص العربي

اجريت الدراسة الحالية في ثلاثة مناطق في محافظة مطروح، مصر، 2012. تضمن العمل 50 من الابل عند عمر (1-10 شهور) من كلا الجنسين وتظهر عليهم العلامات السريرية للالتهاب الرئوي، تم تقسيم الحيوانات الى مجموعتين وفقا لاعمارهم، الجمال الصغيرة عند عمر (1-6 اشهر) والكبيرة عند عمر (7-10 اشهر). من العدد الاجمالي للحيوانات تم ذبح 5 حالات، نفوق 35 حيوان، ومعالجة 10 حيوانات. تم جمع مسحات من الممرات التنفسية العليا بالاضافة لانسجة الرئة المصابة من الحيوانات النافقة للفحص البكتريولوجي. كشفت الدراسة عن وجود الجرثومة سالبة الجرام الاكثر انتشارا (52%) بالمقارنة مع البكتريا موجبة (48%). ويمثل الاي كولاي اعلى المعدلات من الحالات (20%)، في حين كانت الباستوريلا القاتلة عند ادنى قيمة (4%). اما مجموعة الحيوانات المريضة اكلينيكيًا فقد استجابت لخطة العلاج بالمضادات الحيوية وغيرها من الادوية.