

EPIDEMIOLOGICAL, CLINICAL AND THERAPEUTICAL STUDIES ON CASEOUS LYMPHADINITIS IN SHEEP AND GOAT

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ABSTRACT

Out of 800 sheep examined 150 animals proved to contract a disease representing a morbidity rate of 18.75% on other hand out of 50 examined goats 10 proved to be infected with disease representing a morbidity rate 20% concerning the clinical signs observed the disease occurred in two forms the first is the external abscessation which appeared in different site in sheep while mainly located in head and neck in goats. The second form was internal abscesses in liver and mediastinal lymph nodes. It was found that the disease is more prevalent in adult animal where 95.3% of infected sheep aged from 1-4 years while only 1.3% of lambs were infected. Also all infected goats were aged from 1-3 years and no cases recorded in kids under one year. Bacteriological examination revealed *Corynebacterium pseudotuberculosis* isolation 62.5% as single infection. The most effective antimicrobial drugs were amoxicillin 85% followed by gentamycin 80% then enrofloxacin 65%.

INTRODUCTION

Caseous abscessation of lymph nodes and internal organs caused by *Corynebacterium pseudotuberculosis* occurs world wide in sheep, goats, cattle and horses **Aleman et al (1996)**, **Brown and Olander (1987)**, **Davis (1990)** and **Yerubam et al (1997)**. It is an important endemic infection in regions with large sheep and goat population, **Brown and Olander (1987)** and **Literake et al (1999)**. Economic losses result from condemnation and trim of infected carcasses and devaluation of hides **Ayres (1977)** Caseous lymphadenitis is also a cause of ill-thrift and sudden death in animals with internal abscesses. However producers often report that the major impact in the flock is from disagreeable aesthetics which may result in loss of breeding stock

sales as well as early culling **Collett et al (1994)** and **Pepin et al (1994)**. Infection occurs after *Corynebacterium pseudotuberculosis* penetrates through unbroken or abraded skin or through mucous membrane **Brown and Olander (1987)**. Flies and other insects may act as mechanical vectors for transmission of the disease **Doherr et al (1999)**. Infections occur through wounds contaminated with purulent exudates from ruptured external and pulmonary abscesses. Contaminated dipping vats and shearing, handling and feeding equipment are responsible for spread of the organism **Schreuder et al (1994)** along with confinement housing at high stocking densities. The pus contains large number of bacteria that can survive for months in hay, shavings and soil. The disease is most often

Introduced into flock by entry of an apparently healthy carrier from an infected flock by contact on shared pastures, or via contaminated fomites such as shearing equipment **Lloyd et al (1999)**, **Schreuder et al (1986)** and **Kathleen et al (2000)**. Caseous lymphadenitis is a chronic recurring disease. If it occurs in mediastinal lymph nodes it causes a highly fatal **Williamson (2001)**. Animals with superficial abscesses show no obvious ill effects unless the location of the abscess interferes with function such as swallowing or breathing **Schreuder et al (1994)**. The incidence of abscesses steadily increase with age, clinical disease is more prevalent in adult and up to 40% of animals in a flock can have superficial abscesses. The aim of the present study were to the incidence of *C. pseudotuberculosis* isolated from external and internal abscesses in sheep and goat and to identify these isolates biochemically and trial for treatment by using antibiotic according sensitivity test.

MATERIALS AND METHODS

Animals : Sheep : The study was carried on 800 sheep in large sheep private farm .

goats : about 50 goats were under investigation in the same farm.

Bacteriological examination :

Double samples were collected from external abscesses either by aspiration from closed abscesses or via cotton swabs from open abscess all samples were taken under complete aseptic conditions and used for both direct smear and stained by gram stain and isolation of the causative agent by culturing onto 5% sheep blood agar and brain heart infusion agar. Plates were incubated for 24-48 hours

at 37°C. Isolates were identified to be *C. pseudotuberculosis* on basis of colonial morphology, Gram stain and biochemical identification according to **Carter and John (1990)**.

Antimicrobial sensitivity test on isolated corynebacterium pseudotuberculosis isolates for determination of the most effective antimicrobial agent for treatment of the diseased sheep and goats was carried according to **Finegold and Martin (1982)**.

RESULT & DISCUSSION

Caseous lymphadenitis is a chronic, recurring disease . A slowly enlarging , localized and non painful abscess may develop either at the point of entry into the skin or in the regional lymph node (superficial) or external form) from which it may spread via the blood or lymphatic system and cause abscessation of internal lymph nodes or organs (visceral or internal form). Initial infection may cause no clinical signs or may be accompanied by high fever, anorexia, anemia and cellulites at the infection site. Superficial abscesses enlarge and may rupture and discharge infectious pus. In our study was carried on large sheep farm where noticed that 150 of sheep out from 800 heads have superficial abscesses develop in the external lymph nodes while 10 of goats out of 50 heads show abscessation superficially on the head and neck table (1). The lesions was a discrete abscess distended by thick and often dry greenish yellow or white purulent exudate. In sheep the abscess often has the classically described laminated " onion - ring " appearance in cross section with concentric fibrous layers separated by inspissated caseous exudates. In goats the exudates is usually soft and pas-

ty. Postmortum was carried on 5 sheep and one goat abscessation on the Mediostinal L.N. and on the liver. These animals were very emaciated. The incidence of abscesses steadily increase with age, clinical disease is more prevalent in adults table (2) about 148 sheep out from 150 infected sheep 95.3% aged from 1-4 years were showed abscesses while only 2 lambs about 8 months 1.3% were infected. Also all infected goats were aged from 1-3 years and no cases recorded in kids under one year.

Our results in table (3) indicated that the most site of abscesses in sheep occur in the prescapular L.N, prefrontal L.N and mandibular L.N 71.3%, 12% and 8.6% respectively while goats show about 80% of cases occur in the prefrontal L.N, 60% in mandibular L.N and 0% on prefrontal L.N. These results indicate that sheep show several sites of external abscess this may be due to repeated shearing every years and so exposure to frequent wounds which the site of entrance of *C. pseudotuberculosis* while in goats the abscesses in more appear around the head and neck this may be due to transmission by contaminated feed, feeders and other fomites. Also head bolls or fences with protruding nails, wire or splinter causes injuries to the animals. Bacteriological examination, revealed the isolation of *Corynebacterium pseudotuberculosis* as a single infection from 100 cases (62.5%) in both 150 sheep and 10 goats samples collectively these results coincided with results of **Sollman et al (1970)** and **Abu-Zaid (2001)**.

C. pseudotuberculosis grew slowly on blood agar. The colonies were small whitish opaque

surrounded by narrow zone of Beta - hemolysis. It had matt or wrinkled surface and could passed across the agar surface like hockey puck. Because of the high content of lipids in the bacterial cell wall, the colonies spatter in a film. While the colonies were larger in size whitish more luxuriant on brain heart infusion agar. Smears were done directly from pus and from colonies and stained by Gram stain where *C. pseudotuberculosis* was gram positive short coccus bacilli.

Concerning the biochemical characters of the isolated *C. pseudotuberculosis*, all the isolated strains from sheep and goats were nitrate negative, catalase positive and produce urease. Concerning the in vitro sensitivity test the number and percentages of the sensitive and resistant isolates are indicated in table (4) the results of the antimicrobial susceptibility testing are largely in agreement with other **Literak et al (1999)**, **Muckle and Gyles (1982)**, **Skalka et al (1998)** and **Amany (2007)** in that isolates were susceptible to the majority of the antimicrobial agents tested and most were resistant to streptomycin. However treatment with antibiotics is usually not attempted because the formation of the abscesses limits their penetration and effectiveness. We suggest that antibiotics therapy coupled with drainage the abscesses surgically that do appear improves the chance of resolution.

Finally it could be concluded that the case of lymphadenitis is difficult in treatment with therapeutic antibiotic but surgical accompanied with antibiotic is used for this reason there are several points of attention for maintaining good hygiene. Preventing wounds

by careful blade shearing decreasing the infection of wounds by quickly moving animals from higher contamination areas and avoidance of dipping sheep until after all wounds have healed may all decrease infection. Shear-

Table (1) : Morbidity and fatality rates of studied sheep and goats.

Animals	Total number of investigated animals	Number of clinically diseased animals	Morbidity rate of clinically diseased animals		Fatality rate of clinically diseased animals		Healthy animal
			No	%	No	%	
Sheep	800	150	150	18.75	5	3.3	650
Goat	50	10	10	20	1	10	40

Table (2) : Relation ship between infection of *C. pseudotuberculosis* and age of sheep and goats.

Animal	No. of infected animals	No. of animals acquired external abscess		No. of animals acquired internal abscess	
		No	%	No.	%
Sheep 1-4 ylar	148	143	95.3	5	3.3
Lambs one month to year	2	2	1.3	-	-
Goats 1-3 years	10	10	100	-	-
Kids 6-month to one year	-	-	-	-	-

ing sheep youngest to oldest may also help prevent infection of uninfected animals. Cull infected animals from the herd to help reduce the risk of *Cl.* infection. Examine males before introducing them to the females herd.

The presentage is calculated to total number of infected animal (150 → sheep – 10 → goats).

Table (3) : CL incidenc in Sheep and goats.

	Sheep		Goats	
	No.	%	No.	%
Studied animals	800		50	
Total occurrence of the disease	150	18.75	10	20
occurrence of position of abscess				
Prescapular L.N	107	71.3	8	80
Mediostinal L.N	6	4	1	10
Mandibulor L.N	13	8.6	6	60
Supramammary L.N	2	1.3	0	0
Prefemoral L.N	18	12	0	0
Liver	1	0.67	1	10

Table (4) The in vitro sensitivity of *C.pseudotuberculosis* to certain antibiotics.

Antibiotics	<i>C.pseudotuberculosis</i> (100) isolates	
	No.	%
Amoxocyllin	85	85
Gantamycin	80	80
Kanamycin	30	30
Lincomycin	60	60
Tetracyclin	25	25
Erythromycin	30	30
Enrofloxacin	65	65
Streptomycen	5	5
Trimethopriem	10	10

* The percentage was calculated on the basis of the total number of isolates.

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