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Research Article

CLINICAL STUDIES ON RESPIRATORY DISEASES OF LAMBS IN KASHMIR VALLEY

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Abstract: A study was carried on lambs showing clinical picture of respiratory diseases under organized and unorganized intensive rearing system. Clinically, the lambs suffering from respiratory diseases presented nasal discharges (89.30%) which were unilateral in 76.3%, ocular discharges (41.32%), inspiratory dyspnea (80.34%), crackles (42.19%), increased respiratory rate (86.99%), pulse rate (84.97%) and temperature (77.16%).

Keywords: *Crackles, Dyspnea, Lambs, Respiratory diseases*

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Introduction

Lack of ventilation, increasing levels of ammonia and continuing close confinement may play an important role in pathogenesis of lamb pneumonia especially on board ship [1]. Newly born animals are highly vulnerable to infections and diseases as they possess negligible concentrations of circulating immunoglobulins because of inadequate intake of colostrum during the first few hours of life. Colostrum is the only source of antibodies against infectious disease for the newborn lamb. In addition, inadequate colostrum intake usually means that a lamb is deprived of energy, protein, vitamin, mineral, electrolyte, and fluid intake. The body's natural immune mechanisms against infectious diseases such as pneumonia are thus compromised and disease results. Lambs affected with respiratory problems become depressed and go off feed. They may cough and show some respiratory distress. Temperatures are usually over 104°F. The disease may be acute with sudden deaths or take a course of several days. Other signs include a moist, painful cough and dyspnea (difficulty breathing). Anorexia and depression may also be observed. Losses due to respiratory diseases are encountered in the form of mortality, reduced feed efficiency, and slaughter condemnations, as well as through expenditure on prevention and treatment measures. Losses in carcass weight of 1.5 kg and a reduction in live weight gain of 0.8 to 0.9 kg per month for every 10 percent of the lung surface grossly affected by pneumonia has been reported [2]. Subclinical pneumonia is common in production lambs, and causes reductions in growth rate [3]. Death is only a part of the actual losses: treatment expense, poor chronic doing lambs, reduced feed efficiency; reduced average daily gains also result from newborn pneumonia infections [4]. The studies were conducted on the clinical signs in respiratory diseases.

Materials and Methods

The present study was conducted on lambs below the age of 8 weeks irrespective of their sex and breed at Mountain Research Centre on Sheep and Goat, SKUAST-Kashmir, Shuhama and unorganized areas which include selected parts from district Ganderbal and Srinagar. The lambs with respiratory diseases were recognized on the basis of clinical presentation.

Clinical studies

The clinical studies include thorough clinical examination of the animals that were diagnosed with respiratory problems.

Clinical examination

A thorough clinical observation was undertaken with recording of clinical parameters. Systematic clinical examination was done starting from the day of treatment with different antibiotics and 48 hours, 96 hours and 144 hours post treatment. The clinical parameters observed include:

a) Temperature (ºC)
b) Pulse (pulsation per minute)
c) Respiration rate (breaths per minute)
d) Audible abnormal breath sounds
e) Auscultation of thoracic region
f) Discharges (if any, colour and consistency)

For quantification of the results, a General Clinical Assessment Score was used which was based on clinical examination [5]. This helps in indicating the degree of respiratory tract involvement and has a possible range of 0 to 3.

Statistical analysis

The results so procured were subjected to statistical analysis using ANOVA as per Snedecor and Cochran [6].

Results and Discussion

Lambs with respiratory diseases showed some clinical signs like fever with temperature of 104ºF (40ºC), moist, painful cough and dyspnea (difficulty in breathing) along with nasal and ocular discharge, anorexia (loss of appetite) and depression. Examination of the lungs may reveal crackle like sounds and wheezes.

Clinical Studies

Clinical signs and symptoms found in lambs suffering from respiratory diseases included nasal discharge (89.30%), increased respiratory rate (86.99%), increased pulse rate (84.97%), increased temperature (77.16%), crackles (42.19%), ocular discharges (41.32%), wheezes (29.76%), decreased pulse rate (15.02%), decreased temperature (14.16%) and decreased respiratory rate (13.01%). Similar clinical observations have been reported in sheep respiratory diseases by

earlier workers Martin [7]; Robinson 1983 [8], Alidadi *et al*., 2000 [9] Batra *et al*., 2002 [10] and Siji and Vijayakumar, 2007[11]. Depth of respiration was found to be shallow in 35.26 percent and deep in 21.67 percent. Dyspnea was inspiratory in 80.34 percent and expiratory in 21.38 percent. Nasal discharges were unilateral in 76.30 percent and bilateral in 13.01 percent whereas they were serous, mucoid and purulent in 19.65, 20.80 and 13.29 percent respectively. Ocular discharges were unilateral in 24.27 percent and bilateral in 17.05 percent. A clear, bilateral and watery nasal discharge is relatively common in sheep. It generally occurs during closed confinements and poorly ventilated buildings. The rapid respiratory rate is a classical symptom of respiratory disease. Lower airway affections lead to changes in ventilation and blood flow, which in turn lead to inefficient blood-gas exchange and hypoxia. The body compensates for the insufficient gas exchange by breathing more rapidly [12]. Lambs did not show significant change in their rectal temperatures, pulse rate and respiratory rates in either increased or decreased cases. However, with the therapeutic trials, these parameters in the diseased lambs came to the normal range.

Table-1 *Temperature (ºF) in lambs*

Total number of lambs observed	Temperature above normal	Temperature below normal
346	267	49
Percent	77.16	14.16

Table-2 *Temperature (ºF) (Mean ± SE) in lambs before and after treatment*

Group		Temperature (ºF)			
		0 hr	48 hrs	96 hrs	144 hrs
I	Gentamicin	103.20 ± 0.12^{aA}	102.70 ± 0.04^{aB}	102.47 ± 0.04^{aC}	102.43 ± 0.03^{abC}
II	Erythromycin	102.90 ± 0.28^{aA}	102.53 ± 0.15^{aA}	102.43 ± 0.03^{aA}	102.40 ± 0.00^{abA}
III	Tetracycline	102.80 ± 0.30^{aA}	102.57 ± 0.17^{aA}	102.40 ± 0.09^{aA}	102.43 ± 0.03^{abA}
IV	Ciprofloxacin	102.83 ± 0.38^{aA}	102.50 ± 0.21^{aA}	102.37 ± 0.09^{aA}	102.33 ± 0.04^{bA}
V	Infected untreated	102.97 ± 0.30^{aA}	102.60 ± 0.13^{aA}	102.53 ± 0.11^{aA}	102.47 ± 0.07^{aA}
VI	Healthy control	102.37 ± 0.08^{aA}	102.40 ± 0.05^{aA}	102.37 ± 0.03^{aA}	102.37 ± 0.03^{abA}

Values with similar superscript (capital letters=within groups and Small letters=between groups) do not differ significantly (P>0.05)

Table-3 *Pulse rate (pulsation per minute) in lambs*

Total lambs observed	Pulse increased	Pulse decreased
346	294	52
Percent	84.97	15.02

Table-4 *Pulse rate (pulsation per minute) (Mean ± SE) in lambs before and after treatment*

Group		Pulse rate			
		0 hr	48 hrs	96 hrs	144 hrs
I	Gentamicin	84.67 ± 0.76^{aA}	83.17 ± 0.65^{aA}	77.50 ± 1.33^{abB}	77.17 ± 1.17^{abB}
II	Erythromycin	85.17 ± 0.79^{aA}	82.50 ± 0.96^{aB}	78.17 ± 1.05^{abC}	76.33 ± 0.67^{bC}
III	Tetracycline	75.17 ± 4.10^{bA}	76.00 ± 3.90^{bA}	75.83 ± 2.31^{bA}	76.67 ± 1.26^{bA}
IV	Ciprofloxacin	83.83 ± 0.75^{aA}	82.33 ± 0.95^{aAB}	80.83 ± 0.98^{aBC}	79.00 ± 1.00^{abC}
V	Infected untreated	82.33 ± 1.98^{aA}	82.83 ± 2.65^{aA}	82.00 ± 2.19^{aA}	81.33 ± 2.59^{aA}
VI	Healthy control	76.33 ± 0.76^{bA}	75.00 ± 0.86^{bB}	75.67 ± 0.88^{bA}	78.00 ± 0.93^{abA}

Values with similar superscript (capital letters=within groups and small letters=between groups) do not differ significantly (P>0.05)

Table-5 *Respiratory rate (breaths per minute) in lambs*

Total lambs observed	Respiration increased	Respiration decreased
346	301	45
Percent	86.99	13.01

Table-6 Respiratory rate (breaths per minute) (Mean ± SE) in lambs before and after treatment

Group		Respiratory rate			
		0 hr	48 hrs	96 hrs	144 hrs
I	Gentamicin	42.17 ± 0.94^{aA}	38.67 ± 0.88^{aA}	33.00 ± 1.88^{aB}	31.83 ± 1.19^{abB}
II	Erythromycin	36.83 ± 4.88^{abA}	33.83 ± 3.34^{aA}	29.83 ± 2.21^{aA}	28.50 ± 1.02^{abA}
III	Tetracycline	32.67 ± 6.24^{abA}	30.17 ± 5.18^{aA}	26.83 ± 4.13^{aA}	25.50 ± 2.56^{abA}
IV	Ciprofloxacin	31.33 ± 5.81^{abA}	29.00 ± 4.76^{aA}	26.83 ± 3.95^{aA}	23.50 ± 2.72^{bA}
V	Infected untreated	31.00 ± 5.48^{abA}	34.50 ± 5.37^{aA}	32.17 ± 5.18^{aA}	33.17 ± 4.87^{aA}
VI	Healthy control	25.83 ± 1.76^{bA}	28.33 ± 1.43^{aA}	27.33 ± 1.96^{aA}	27.17 ± 1.22^{abA}

Values with similar superscript (capital letters=within groups and small letters=between groups) do not differ significantly (P>0.05)

Table-7 Audible abnormal breath sounds in lambs

Total lambs observed	Depth of respiration		Dyspnea	
	Shallow	Deep	Inspiratory	Expiratory
346	122	75	278	74
Percent	35.26	21.67	80.34	21.38

Table-8 Auscultation of thoracic region

Total lambs observed	Crackles	Wheezes
346	146	103
Percent	42.19	29.76

Table-9 Nasal discharges in lambs

Total lambs observed	Type of discharge				
	Unilateral	Bilateral	Serous	Mucoid	Purulent
346	264	45	68	72	46
Percent	76.30	13.01	19.65	20.80	13.29

Table-10 Ocular discharges in lambs

Total lambs observed	Type of discharge	
	Unilateral	Bilateral
346	84	59
Percent	24.27	17.05

Table-11 General clinical assessment score of lambs with respiratory tract involvement

Parameter	Clinical Score	Number	Percent
General clinical assessment scores	1	107	30.92
	2	218	63.01
	3	21	6.06

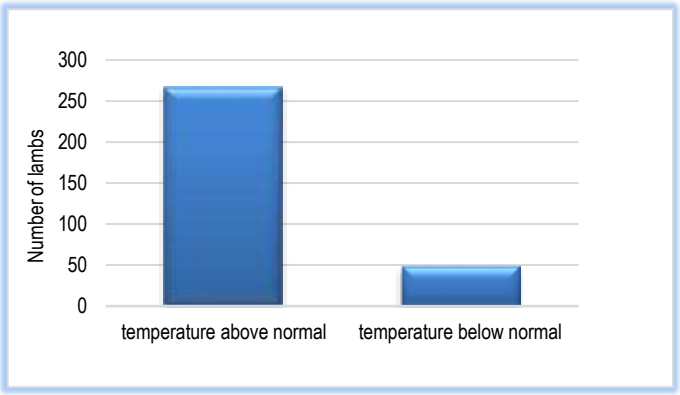

Fig-1 Temperature (ºF) in lambs

Application of research: Study help in understanding more about respiratory diseases of lambs and the study will help in treating the diseased animals.

Research Category: Animal Health

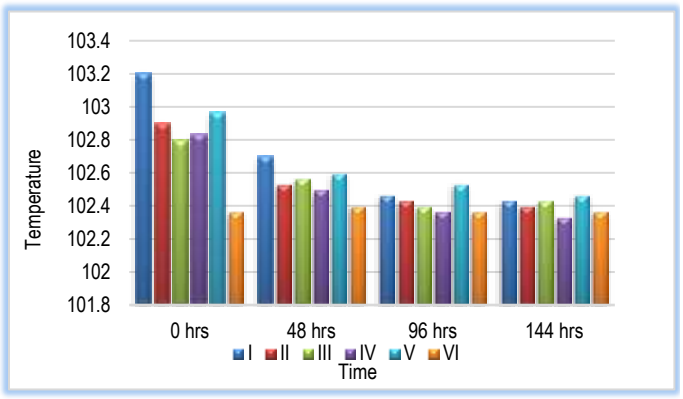

Fig-2 Temperature (°F) (Mean ± SE) in lambs before and after treatment

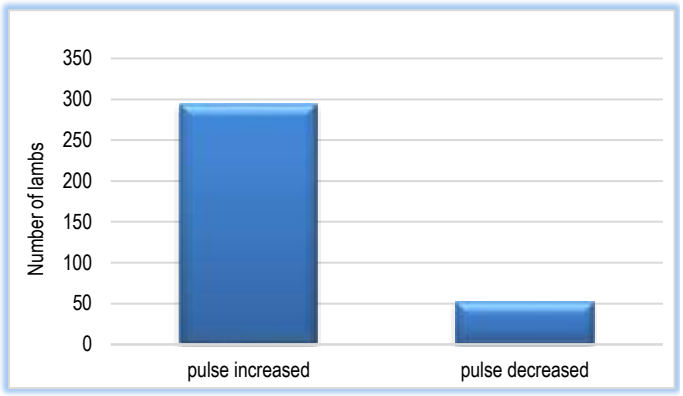

Fig-3 Pulse rate (pulsation per minute) in lambs

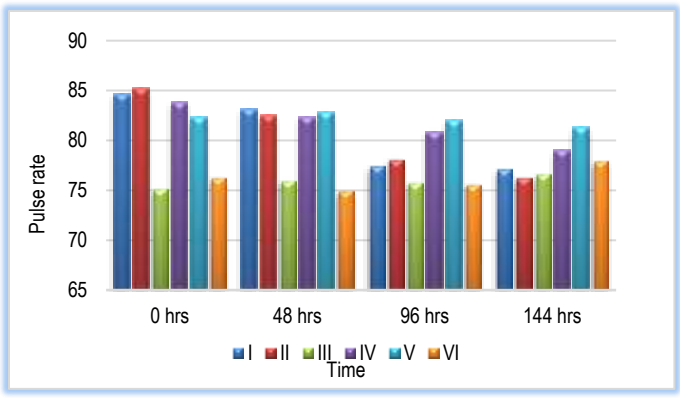

Fig-4 Pulse rate (per minute) (Mean ± SE) in lambs before and after treatment

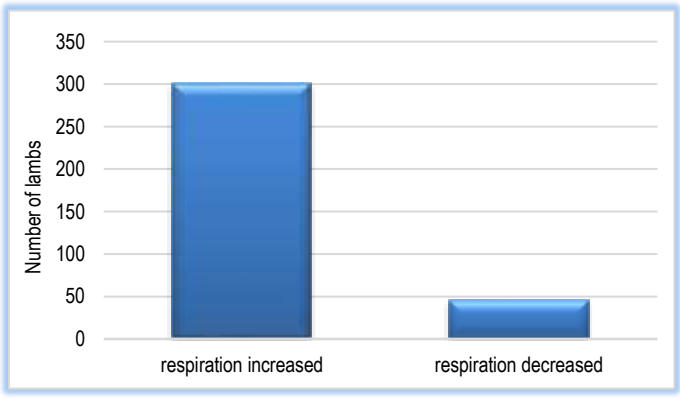

Fig-5 Respiratory rate (breaths per minute) in lambs

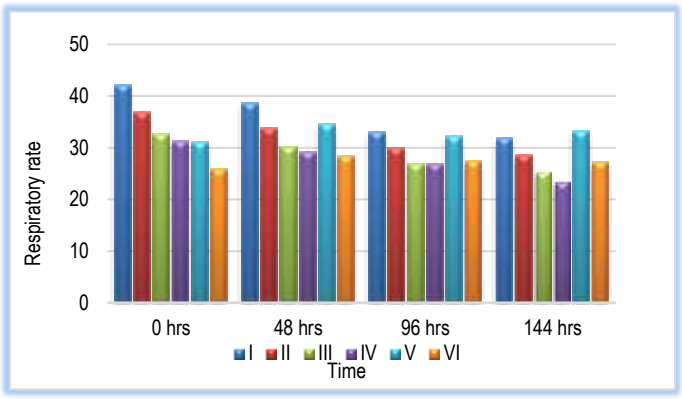

Fig-6 Respiratory rate (breaths per minute) (Mean ± SE) in lambs before and after treatment

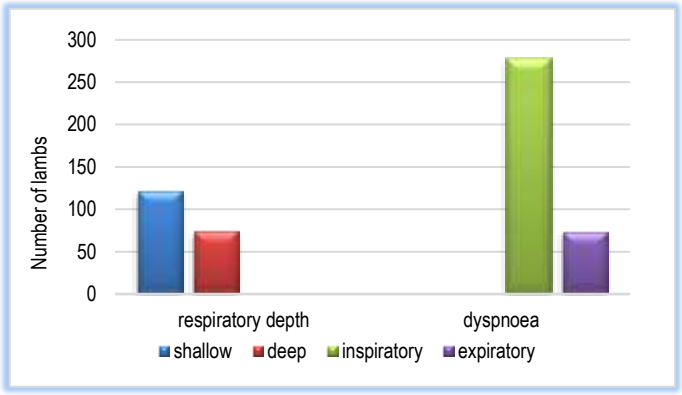

Fig-7 Audible abnormal breath sounds in lambs

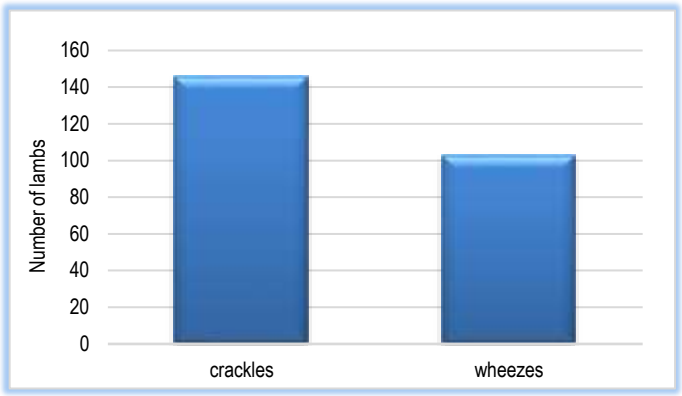

Fig-8 Auscultation of thoracic region

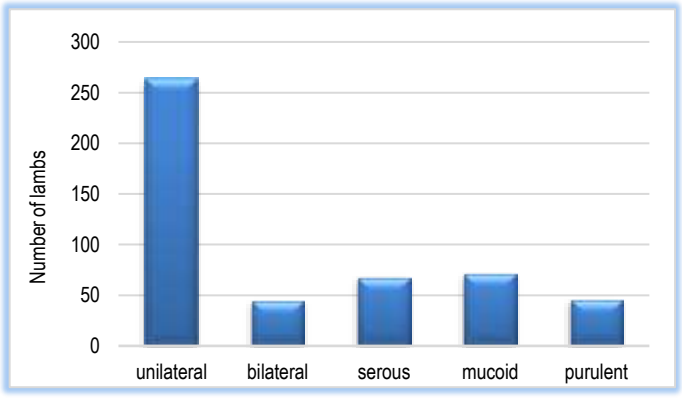

Fig-9 Nasal discharges in lambs

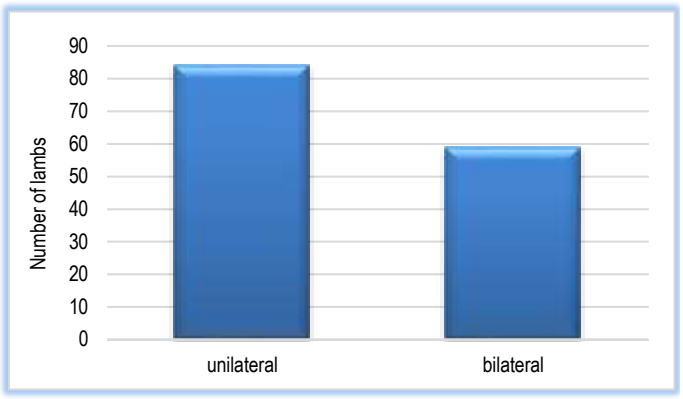

Fig-10 Ocular discharges in lambs

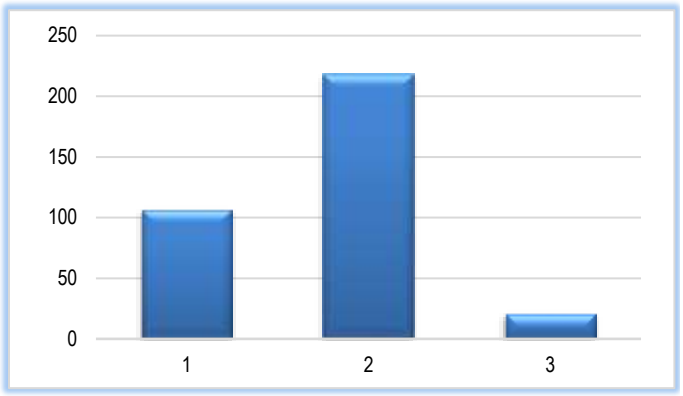

Fig-11 General clinical assessment score of lambs with respiratory tract involvement

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Author Contributions: All authors equally contributed

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Study area / Sample Collection: Mountain Research Centre on Sheep and Goat, SKUAST-Kashmir, Shuhama

Breed name: Corriedale and South Down

Conflict of Interest: None declared

Ethical approval: This article does not contain any studies with human participants or animals performed by any of the authors.
Ethical Committee Approval Number: Nil

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