

Comparative Results in the Treatment of Necrobacillosis in Sheep, Depending from the form of Lameness and Hematological Indicators



Veterinary Medicine

Keywords: Necrobacillosis, sheep, area of Malisheva, Linco Spectin, neutrophils, etc.

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Abstract

The study aims to compare the treatment schemes in sheep with Necrobacillosis, depending on the clinical status and hematological indicators. In the period 2012-2014, in four sheep flocks in the area of Malisheva, was experimented three treatment schemes in animals with easily scale, average and heavy limp. Before beginning treatment, the animals were studied hematological indicators. In the first group scheme was used: Oxytetracyclin hydrochloride (Topoxy 10 %) i/muscle. In the second group was used: Linco Spectin i/muscul and in the third group was used: Linco Spectin subcutaneous on the three points in the crown area of the damaged heels. Treatment continued for 3-5 consecutive days. Sheep of all groups were treated with incision of over increased horn hooves and then with their disinfection spray Chlortetracycline as the day went on medication. The data obtained was processed statistically and faced the efficiency depending on the results and indicators hematological. The best efficiency was reached with the use of preparation Linco Spectin into the muscle and subcutaneous. The faster and better respond animals to the number of grown white cells on account of neutrophils, despite the clinical situation of their lameness. Between effectiveness of treatment and the number of neutrophils were observed correlative connection with medium hardness and positive character. For the same healing results, the use of the preparation Linko Spectin subcutaneously in the crown area of the heel was much lower cost.

Introduction

Necrobacillosis infection is very widespread in flock of sheep in the hilly plains by remaining problematical and with visible on productive and reproductive capabilities of these animals. From this infection depending on the climatic conditions and precipitation can be affected by 20 to 90% of heads, *Berberi P. e bp. (2009), Pugh, D.G. (2003)*. Necrobacillosis infection or flawed diseases is costly for breeding farms of sheep, *Wassink, G.J. et al. (2005)*. Many manufacturers lose time and money every year to attempt to control it in their flock, *Egerton J. R. et al. (2002)*. Necrobacillosis sheep hooves is multifactorial diseases, *Blood, D.C. et al. (2005)*. It flows in form of heave, accompanied with painful flaws, *Wassink, G.J., et al. (2003, 2005)*, observed in every season of the year and displayed the highest density in the Spring and Autumn season, when the humidity is higher, *Berberi P. e bp. (2009), Radostits M, et al. (2005)*. For the treatment of this infection in sheep have been proposed an use various schemes, the effectiveness of which has been controversial. The study aims to compare the efficacy of treatment schemes and cost depending and hematological indicators of affected animals.

Material and methods

The study began in 2012 and is ongoing. The experiment was extended to 4 batches of sheep in the area of Malisheva, which have present nekrobacilar infection. In each batch were raised experiment groups of animals which had composed three subgroups with 30 head of lambs and sheep, chosen with individuals to easily scale, medium and heavy limp. Before applying treatment schemes in animal is taken blood with anticoagulant (EDTA), and prepared smear for controlling blood celled indicators. Blood samples and smear were checked in the laboratory MEDILAB in Pristina. For the experiment were applied 3 treatment schemes. Animals treated according schemes marked with color to follow continuity.

- For the first group was used schemes: Oxytetracyclin hydrochloride (Topoxy 10%) i / muscular, with the dose of 0.5 ml / 10kg body weight, 1 time per day for 3-5 consecutive days (deep into the muscle)
- For the second group uses: Link Spectin (Linkomicin-Spectinomycin) i / muscular with dose 1ml / 10 kg body weight, 1 time per day for 3-5 consecutive days (deep into the muscle).
- The third group was used: Linko Spectin (Linkomicin-Spectinomycin) with dose 1ml / 25 kg body weight, subcutaneously (s / c) into three points in the crown area of damaged heels. Treatment continued for 3-5 consecutive days.

Sheep of all groups were treated with incision of over increased horn and then hooves were disinfection with spray Chlorotetracycline for as many days how much treatment continued. For animals in the study were calculated average values of blood celled indicators. In consideration were taken indicators of total white cells, neutrophils, basophils, eosinophils, lymphocytes and report neutrophils / lymphocytes. The data were processed statistically. For each group of animals was estimated efficiency of each treatment schemes based on clinical recovery percentage of animals treated according to the degree of lameness and level of hematological indicators. Clinical evaluation efficiency of treatment for individuals became scoring system from 1 to 10.

Results and Discussion

Results obtained for hematological indicators in sheep which limp ,after statistical processing of values presented in Table 1. For each group of animals, according to the form of their limp, data on indicators hematological are provided their minimum values, maximum and average.

Table 1: Values of hematological the indicators according to the clinical condition of the animal, before beginning treatment.

Nr	Indicators cell	Reference Values	The indicators of hematological values according to the clinical condition of the animals					
			Easy limp		Average limp		Heavy limp	
			Min-Max	Medium	Min-Max	Medium	Min-Max	Medium
1	WBC x 10 ⁹ /l	4.0 – 12.0	7.2 – 9.3	8.2 - 0.22	9.7 - 13.8	11.8 ± 2.1	8.2 ± 9.9	9.1 ± 0.9
2	Neutr. x 10 ⁹ /l	0.7 – 6.0	2.6 – 6.5	4.6 - 0.06	5.8 - 8.9	7.33 ± 0.2	3.8 ± 7.5	5.46 ± 0.16
3	Lymph. x 10 ⁹ /l	2.0 – 9.0	1.8 – 6.2	3.4 - 1.7	1.3 - 3.5	2.5 ± 1.2	2.5 ± 3.9	3.2 ± 0.8
4	Mon. x 10 ⁹ /l	0 – 0.75	0.2 – 0.2	0.2 - 0.04	0.2 – 0.2	0.2 ± 0.06	0.2 – 0.2	0.4 ± 0.02
5	Euzin. x 10 ⁹ /l	0 – 1	0 – 0.1	0.1 - 0.01	0 – 0.1	0.1 ± 0.01	0 – 0.1	0.1 ± 0.01
6	Basophils	0 – 0.3	0 – 0.2	0.0 - 0.01	0 – 0.2	0.0 ± 0.01	0 – 0.2	0.0 ± 0.01
7	Rep: neutr/limf	0.3 – 0.7	-	1.35	-	2.92	-	1.75

Note: Reference values according Radostits, 2005.

1. Scheme of the treatment of animals with preparation Topoxy 10%

The preparation with contents Oxytetracyclině hydrochloride 10 g and Lidocain 1g, 100 ml, was injected deep into the rear thigh muscles. In tab. 2 are the results of the treated animal healing faced with average number of neutrophils and the report neutrophil / lymphocyte in average values for each group of animals treated.

Tab. 2: The results obtained from the use of tetracycline preparation in animal with necrobacillosis, according to the form of limp and hematological indicators.

Nr	Treatment scheme	Indicators confronted by groups								
		Easy limp			Average limp			Heavy limp		
		Neutr.	N/lym	% heal	Neutr.	N/lym	% heal	Neutr.	N/lym	% heal
1	Tetracycline	4.6 ± 2.0	1.35	80.76	7.3 ± 1.6	2.92	47.61	5.4 ± 0.16	1.75	22.22

The efficacy of treatment was computed with percentage of animals healed in the report with animals treated to the total. In individual animals was computed the effectiveness of healing depending on the clinical improvement of 10 points system. With 10 points were assessed fully animals healed and with 1 point animals were not clinical improvements. At the conclusion of all the leaders (total 82) treated with preparation Topoxy, regardless of the form of limp and the degree of damage to heels clinical recovery was reached in 54 heads or at the 65.85%. Best results were achieved in the treatment of sheep with easily form of limp.

2. Scheme of the treatment of animals with preparation Lincospectin, i / m

The final results in the treatment of sheep with the preparation Linco Spectin i / muscle, regardless of the form of clinical appearance was 80 heads of clinically cured by 101 heads of treated, or 79.2%, tab.3. Compared with treatment scheme with preparation Topoxy, treatment of sheep with Linco Spectin preparation was 13:35% more effective.

Tab. 3: The results obtained from the use of the preparation Linko- Spectin (i / m) in animals with necrobacillosis, according to the form of limp and hematological indicators.

Nr	Treatment scheme	Indicators confronted by groups								
		Easy limp			Average limp			Heavy limp		
		Neutr.	N/lym	% heal	Neutr.	N/lym	% heal	Neutr.	N/lym	% heal
1	Linc. i/m	4.6 ± 2.0	1.35	96.82	7.3 ± 1.6	2.92	60.0	5.4 ± 0.16	1.75	21.42

3. Scheme of treating animals with Linco-Spectin preparation, s / cutan in the crown of hooves

The final results in the treatment of sheep with preparation Linco Spectin s /cutan in the crown of the area hooves injured regardless of the form of clinical appearance was 73 heads of clinically healed by 99 heads of treated, or 73.73%, Table 4.

Tab. 4: The results obtained from the use of the preparation Linko- Spectin (i / m) in animals with necrobacillosis, according to the form of limp and hematological indicators.

Nr	Groups according of scheme treatment	Treguesit e ballafaquar sipas grupeve								
		Easy limp			Average limp			Heavy limp		
		Neutr.	N/lym	% heal	Neutr.	N/lym	% heal	Neutr.	N/lym	% heal
1	Linc. s/c	4.6 ± 2.0	1.35	86.44	7.3 ± 1.6	2.92	60.0	5.4 ± 0.2	1.75	46.66

Discussion

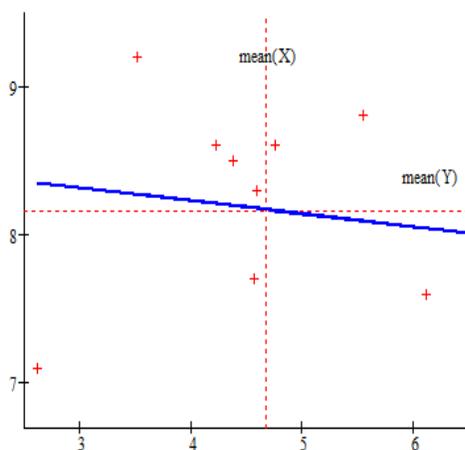
In total for time of the experiment were cured clinically 207 head of sheep, regardless of the form of clinical appearance Necrobacillosis, by 282 heads of treated or 73.4%. On average these values were the results of treatment with the preparation scheme Linco Spectin applied s / cutan in the crown area of the hooves damaged (73.73%), tab. 5. Results with using the Linco Spectin preparation i/ muscle were 79.2% and treatment with preparation Topoxy were 65.85%.

Tab. 5. Comparative results of necrobacillosis treatment with different schemes applied.

Treatment schemes	Treated heads total	Clinically healed		Difference in % of healing	
		Head	%	± %	tD
Topoxy i/m	82	54	65.85	-	-
Linko Spectin i/m	101	80	79.20	+ 13.45	16.32
Linko Spectin s/c	99	73	73.73	+ 7.88	9.14
TOTAL	282	207	73.40	-	-

The results obtained for the efficacy of treatment were processed statistically and defined correlations or conjunction between the number of neutrophils, the degree of limp and healing process. The data obtained are presented with graphs of linear regression equations corresponding to two factorial addition.

Graph No 1. Results of Necrobacillosis treatment in sheep wit easily form of limp, depending on the number of neutrophils.



$$(r = - 0.147, tD = - 8.16, \sigma = 0.69)$$

$$\% \text{ healing} = 8.58 + (- 0.08 \times \text{Nr. neutrophils.})$$

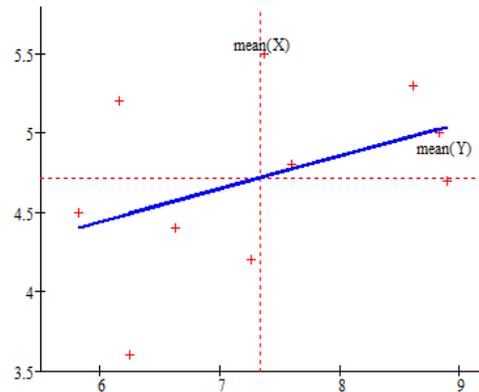
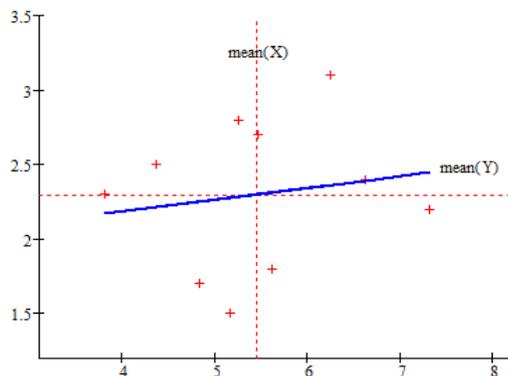
In animals with easily form of limp, regardless of schemes and preparation used, the efficacy of treatment is not related to the number of neutrophils. Between these two indicators the links were random. The graph of Linear regression shows the lack of conjunction ($r = - 0.147$). The occurrence apparently related to the initial stage of inflammation. In animals with limp average form are evidenced correlative connection. In linear regression graph no.2 seem correlative connection of average strength ($r = 0.413$) and positive character. In cases of average forms limp in animals apparently good note of acute inflammation phase and the impact of increased neutrophils in focus of infection. In the literature consulted so far have lacked data to realize confrontation with the results of our study.

Graph No 2. Results of treatment of Necrobacillosis in sheep with average form of limp, dependent upon the number of neutrophils

($r = 0,413$, $TD = 6:46$, $\sigma = 0:57$).
 % healing = $20.3 + (0:20 \times \text{no. Neutrophil})$

In animals the group with heavy form of lameness the occurrence of joint link of the addiction treatment efficiency by the average number of neutrophils is weak. Graph No.3 linear regression indicates a weak link correlative ($r = 0,162$) of positive character. In our opinion such a phenomenon is related not only to the process of inflammation but also the degree of increased in tissue damage from time of continuing the presence of hearth infection Graph No.3. Results of treatment Necrobacillosis in sheep with heavy form of limp, dependent upon the number of neutrophils.

($r = 0.162$, $tD = 8.56$, $\sigma = 0.51$)



% healing = $1.86 + (0.07 \times \text{Nr. Neutrophil})$

From the data obtained for the the efficiency of treatment of animals with necrobacillosis (tab. 5) it appears that differences in treatment efficacy between schemes with preparation Linco Spectin we think that fully justify its use s / cutan in the crown area of the damaged hooves and this not only for the low dose of use but also to the low level of antibiotic in milk and meat to treated sheep.

Conclusions

1. In animals with nekrobacilozë there are changes in hematological indicators. The most affected indicator is the number of neutrophils and report neutrophil/lymphocyte. Increased number of neutrophils was found in the animals of the group with average degree of limp ($7.33 \pm 0.2 \times 10^9$, compared $4.6 - 0.06 \times 10^9$ in animals with easily form of limp and $5.46 \pm 0.16 \times 10^9$ neutrophils in animals with heavy form of limp)
2. The final results of clinical recovery of sheep necrobacillosis regardless of the form of clinical appearance of preparation Linco Spectin i/ muscle were 79.2%. From sheep that were treated with Linco Spectin preparation s / cutan in the crown area of injured hooves regardless of the form of clinical appearance were cured clinically 73.73% and the heads of treated.
3. For treatment of Necrobacillosis in sheep we recommend use of preparation Linco Spectin to use s / cutan in the area of crown damaged hooves, in dose 1 ml for 25 kg body weight, for 3 to 5 days.

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