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SPECIFIC THERAPEUTIC MANAGEMENT IMPLICATIONS IN NEONATAL LAMBS MORTALITY

Stere SPONTE, Alexandra Mihaela CRISTIAN, Mario CODREANU, Iuliana CODREANU

University of Agronomic Sciences and Veterinary Medicine of Bucharest, 59 Mărăşti Blvd, District 1, 011464, Bucharest, Romania, Phone: +4021.318.25.64, Fax: + 4021.318.25.67

Corresponding author email: sponte.stere@yahoo.com

Abstract

Curative interventions, expensive and long, are often followed by clinical recovery, but with compromise and reduction of weight dynamics and productive growth. In this context, the precocity of the therapeutic approach, together with the consistency and dynamic modulation of the treatment of peri- and neonatal diarrhea syndromes in lambs conditions the recovery of such affected patients (with minimal productive consequences), contributes to ensuring the well-being of the animals and reducing the risk of inducing antibiotic resistance. The research took place between 2022-2023 on 196 lambs of different breed and age, within the county of Tulcea, the locality of Baia. The animals included in the study were divided into 2 groups, namely study group 1 consisting of 98 lambs in which the diagnosis was established clinically and study group 2 consisting of 98 lambs that benefited from a definite etiological diagnosis (rapid Rainbow test Bio K) along with an etiologically oriented and specific therapeutic protocol. The percentage analysis of the mortality rate in the diarrheal syndrome in lambs shows an increased value in lambs treated with non-specific medication compared to lambs in which the therapeutic protocol approached was of an etiological nature where the percentage value is reduced. The calculated productive difference in body weight between etiologically diagnosed and related treated group 4 versus group 1 without etiotropic approach resulted in a 15% greater weight gain at day 60 in the group 4 member compared to the group 1 member.

Key words: *lambs, mortality, therapy.*

INTRODUCTION

In the intensive breeding of farm animals, the peri- and neonatal period is a critical window of maximum vulnerability due to the functional lack of an own immunological system and the dependence on passive immunity - acquired through the absorption of immunoglobulins from colostrum, in the first 24 hours of life.

Curative interventions, expensive and long, are often followed by clinical recovery, but with compromise and reduction of weight dynamics and productive growth. In this context, the precocity of the therapeutic approach, together with the consistency and dynamic modulation of the treatment of peri- and neonatal diarrhea syndromes in young sheep conditions the recovery of such affected patients (with minimal productive consequences), contributes to ensuring the well-being of the animals and reducing the risk of inducing antibiotic resistance.

MATERIALS AND METHODS

The research took place between 2022-2023 on 196 lambs of different breed and age, within the county of Tulcea, the locality of Baia.

The animals included in the study were divided into 2 groups, namely study group 1 consisting of 98 lambs in which the diagnosis was established clinically (inappetence, anorexia, moderate dehydration, hair loss, prolonged sternal recumbency and inert to environmental stimuli, all patients presented enteric syndrome, diarrhea with a pasty-fluid consistency, ihorous odor and reduced quantity) (Figure 1) in the absence of additional diagnostic methods, and the treatment implemented was non-specific (Table 1) (Enrofloxacin single dose of 7 mg/kg orally/ Amoxicillin dose of 10 mg/kg GC every 24 hours, 3 days, Buscopan compositum 0.15-0.2 ml intramuscularly, per os rehydration with a solution composed of 1l water, 7 g NaCl, 1.5 g KCl, 0.5 g $CaCl_2$, with 150 ml/individual)

and the group of study 2 composed of 98 lambs that benefited from an etiological diagnosis of certainty (Rainbow Bio K rapid test) (Figure 2) alongside an etiologically oriented and specific therapeutic protocol (Table 2) - Paromomycin dose of 100 mg/kg GC, per os, administration per day, for 11 days, to 50 individuals and Ceftiofur to 28 lambs and Halofuginone to 20 animals, with a classification based on the therapy carried out (6 batches).

Figure 1. Lamb diarrhea Syndrome

Figure 2. Rainbow rapid test

Table 1. Non-specific therapy in group 1 lambs

Batch 1 n=34	Batch 2 n=28	Batch 3 n=36
Enrofloxacin	Amoxicillin	Enrofloxacin

Table 2. Specific therapy in group 2 lambs

Batch 4 n=30	Batch 5 n=28	Batch 6 n=40
Paromomycin	Ceftiofur	Halofuginone

Figure 5. Specific teraphy administration in lambs

RESULTS AND DISCUSSIONS

Percentage analysis of the mortality rate in the diarrheal syndrome in lambs shows an increased value in lambs treated with non-specific medication compared to lambs in which the therapeutic protocol addressed was of an etiological nature where the percentage value is reduced.

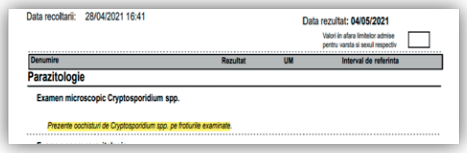
The clinical approach of the first three batches proved that the establishment of a non-specific symptomatic therapy is not judicious, which, in addition to the failure to correct the disease, risks creating favorable conditions for the creation of chemotherapy resistance or antibiotic resistance. The result being an unsatisfactory one, which brings unjustified expenses to the operation.

Table 3. Mortality rate in group 1

Batch 1	Batch 2	Batch 3
50%	50%	40%

Diagnosing the etiological agent through paraclinical examinations, in a specialized laboratory, provides clear and certain information, however, the average term of 5-10 days imposed for receiving the result, helps us to form an idea of the characteristics of the microbiome of the farm more than to quickly establish an etiologically related treatment.

On the other hand, the diagnosis by the method of rapid antigen coupling tests from feces is a simple, pragmatic and easy method to perform in the field (Figures 3, 4).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Valori in afara limitelor admise pentru varsta si sexul respectiv
Denumire Rezultat UM Interval de referinta
Parazitologie
Examen microscopic Cryptosporidium spp.
Prezente ochisturi de Cryptosporidium spp. pe frotiurile examinate.

Figure 3. Test pozitiv - *Cryptosporidium* spp.

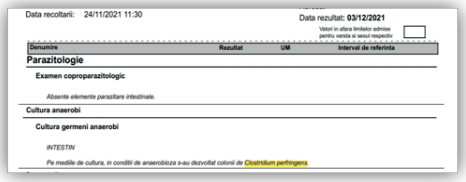

Data recoltarii: 24/11/2021 11:30 Data rezultat: 03/12/2021
Valori in afara limitelor admise pentru varsta si sexul respectiv
Denumire Rezultat UM Interval de referinta
Parazitologie
Examen coproparazitologic
Absente elemente parazitare intestinale.
Cultura anaerobi
Cultura germeni anaerobi
INTESTIN
Pe mediile de cultura, in conditii de anaerobioza s-au dezvoltat colonii de Clostridium perfringens.

Figure 4. Test pozitiv - *Clostridium perfringens*.

With a high sensitivity and sensitivity, it shortens the response time and helps to establish an optimized treatment scheme in correlation with the etiological agent.
Plus the value that the etiological diagnosis brings in the choice of treatment, is proven by the differences in mortality between groups 1, 2, 3 (approximately 50%) and groups 4, 5, 6 (approximately 10%). The fatality rate dropped by up to 80%. Mortality rates by batch are found in the Tables 3 and 4.

Table 4. Mortality rate in group 2

Batch 4	Batch 5	Batch 6
11%	12.5%	38.3%

The evolution of weight during the pediatric period represents both an individual and a group factor that highlights the well-being of the animal (as well as hygienic-dietary conditions, along with the absence of infectious pathologies. So, in order to observe the evolution of individuals from the same environment, we resorted when measuring their weights. Individuals' weight is similar at the start of the study (Figure 6, Tables 5 and 6).

Figure 6. Weight determination in a lamb

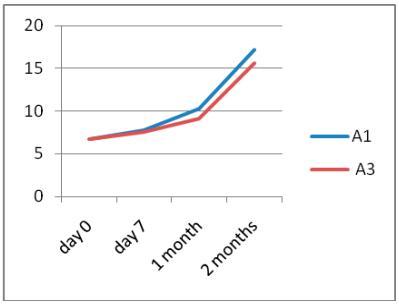
Table 5. Evolution of body weight in group 1 (kg)

Body weight	Batch 1		Batch 2	
	M1	M2	M3	M4
day 0	6.3	6.1	6	6.1
day 7	7.4	7.1	7.2	7
1 month	9.2	9	8.6	8.4
2 months	15.4	15.2	14.8	14.9

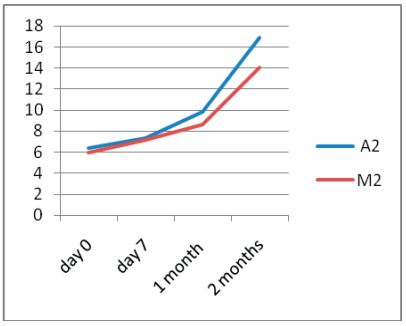
The calculated productive difference (Graphics 1 and 2) in body weight between etiologically diagnosed and related treated group 4 versus group 1 without etiotropic approach resulted in a 15% greater weight gain at day 60 in the group 4 member compared to the group 1 member.

Table 6. Evolution of body weight in group 2 (kg)

Body weight	Batch 4		Batch 5	
	6.7	6.4	6.7	6.4
day 0	7.8	7.3	7.6	7.2
day 7	10.25	9.8	9.1	8.6
1 month	17.15	16.85	15.64	15.34
2 months	6.7	6.4	6.7	6.4



Graphic 1. Batch 4-batch 5 productive differences



Graphic 2. Batch 4-batch 1 productive differences

CONCLUSIONS

The approach of a correlated etiological treatment, after the identification of the primary pathogen responsible and the implementation of a modular therapy, individually adapted, allowed the reduction of mortality in patients with peri- and neonatal diarrhea syndrome in young sheep.
The use of etiotropic treatment schemes induced a decrease in the percentage of mortality in the herd by 75% and an increase in weight at 60 days by 15%, comparing the results of batch 1 and 4.

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