



The Main Causes of Dyspepsia in Lambs and Their Symptoms

Askarov S.S.

Independent Researcher, Samarkand State University of Veterinary Medicine, Livestock and Biotechnology,
Uzbekistan

<http://dx.doi.org/10.18415/ijmmu.v10i10.5216>

Abstract

This scientific work provides information on the causes of dyspepsia in lambs, analysis of scientific literature data and results of scientific observation on clinical and laboratory investigations.

Keywords: *Dyspepsia; Lambs; Antenatal Causes; Metabolic Factors; Postnatal Causes; Clinical Symptoms; Diarrhea; Dehydration; Peripheral Hypothermia; Toxemia; Abdominal Pain; Spleen Atrophy; Substance Exchange; Alimentary Dystrophy; Ketonuria*

Introduction//The Relevance of the Subject

Decree No. PD–4576, issued by the President of the Republic of Uzbekistan on January 29, 2020, pertains to supplementary measures implemented by the state to provide support to the livestock industry. Additionally, the decree titled “Measures for further development of livestock breeding and strengthening of the feed base,” dated February 8, 2022, outlines strategies aimed at enhancing livestock breeding practices and fortifying the feed resources inside the country. Dyspepsia, a prevalent condition observed in lambs, poses a significant challenge to the sustainable progress of the sheep business in animal husbandry, particularly in achieving the prioritized objectives outlined in resolutions PD–121.

Dyspepsia is a pathological condition that manifests in animals at the age of 7–10 days, primarily due to disruptions in the processes of digestion and metabolism, accompanied by body dehydration and overall intoxication. The disease can be categorized into distinct categories, including simple, toxic, enzyme–deficient, autoimmune, immune–deficient, and alimentary.

According to Sh.S. Mamatov (1996), calf dyspepsia can be attributed to prenatal factors such as metabolic abnormalities in beef cows, substandard colostrum quality, and insufficient levels of immunoglobulins and leukocytes. Postnatal causes encompass factors that impact the animal subsequent to its birth, notably the delay in providing the initial feeding to a newborn animal within a timeframe of 1–1.5 hours, as well as deviations from proper protocols for housing and nourishing the animal.

According to B.M. Eshburiyev (2016), calf dyspepsia is characterized by three pathological connections in its pathogenesis: dysfunction of the digestive system, dysbacteriosis, and fermentopathy. Additionally, it is associated with symptoms such as diarrhea, dehydration, imbalances in acid–base

equilibrium and water–electrolyte exchange, as well as hemodynamic disturbances and auto-intoxication resulting from blood clotting. In a study conducted by A.V. Manasyan et al. (2003), it was shown that the levels of renin and pepsin, both of which are proteolytic enzymes, exhibited a drop to 62.0 ± 2.21 mkg/l and 0.73 ± 0.05 mg/ml, respectively, in calves suffering from dyspepsia. Animals that have undergone recovery exhibit stunted growth and heightened vulnerability to many diseases, particularly respiratory ailments, as a consequence of diminished bodily resilience.

The scientific and literary evidence mentioned above indicates that there is a lack of comprehensive measures to address dyspepsia in lambs within our Republic. Consequently, there is an urgent need for research focused on developing scientifically grounded methods for early diagnosis, effective treatment, and preventive measures against this disease. Scientific studies are often regarded as an essential component of academic research. The subject matter and methodologies employed in the research endeavor. Between 2021 and 2023, “Olg‘a” LLC conducted a scientific study in the field of cow breeding in the Nurabad district of the Samarkand region. Additionally, research was conducted at a sheep farm owned by the private enterprise named “Bobir Murodalievich” in the Kamashi district of the Kashkadarya region, as well as at the “Qora kamar” farm in the Boysun district of the Surkhandarya region. It was carried out in the lambs and ewes of karakol and hisar breed in the conditions of the farm. This study aimed to evaluate the potential association between the clinical signs detected in lambs born from ewes with ketonuria, alimentary osteodystrophy, alimentary dystrophy, hepatic dystrophy and the presence of these diseases in the maternal body.

The present study aims to conduct an analysis of the research findings. The findings of the conducted study revealed that the prevalence of dyspepsia among lambs varies across different geographical regions. Specifically, the incidence was observed to be approximately 30–40% among karakol lambs raised in desert areas, 20–30% among hisar lambs, and 25–30% and 20–30% in mountainous regions. Additionally, the prevalence in mountainous areas was found to be 20–30% and 10–20%, respectively.

Research findings indicate that cold turkeys have a low content of sugar (ranging from 51.1% to 60.0%), phosphorus (ranging from 80.0% to 88.9%), and carotene (ranging from 66.9% to 77.0%). Additionally, the calcium content in their diet is within the range of 130% to 174.1%. Furthermore, cold turkeys exhibit an excessive amount of fiber (ranging from 15.5% to 242.2%). These dietary characteristics, along with metabolic disorders resulting from inadequate physical activity (such as limited walking and nocturnal movement), contribute to the presence of this pathology. The study revealed that it exerts a major influence on the etiology of dyspepsia in lambs.

Lambs afflicted with dyspepsia have a heightened frequency of feces, often ranging from 8 to 12 occurrences per day, during the initial two days of the ailment. Subsequently, these lambs experience a persistent state of diarrhea in the subsequent days. It was observed that a substantial quantity of mucous substance was present, and in several instances, it was found to be intermingled with blood. During the 3rd to 5th days of the disease, lambs exhibit pronounced symptoms including severe weakness, diminished responsiveness to external stimuli, indications of dehydration such as dryness of the nose and skin, sunken eyeballs, elevated heart rate reaching 200–210 beats per minute, labored breathing at a rate of 46–80 breaths per minute, loss of appetite, and adynamia. Additionally, the body temperature initially rises to $41\text{--}42^{\circ}\text{C}$ and subsequently decreases. Certain lambs exhibited symptoms including abdominal wall tenderness upon palpation, involuntary defecation, anal sphincter paralysis, fecal odor upon contact, and cyanosis of the exterior mucous membranes surrounding the tail and anus. Lambs that have been infected frequently exhibit a prone position, with some displaying a staggering gait, and a notable occurrence of paralysis in the posterior region of the body.

The disparity in dyspepsia prevalence between lambs in mountainous regions and those in other regions can be attributed to the favorable conditions offered by mountainous environments for the optimal functioning of the digestive organs, namely the stomach, intestines, and liver, in lambs of both breeds.

Our research findings indicate that the duration of dyspepsia in lambs varies between 1–7 days for karakol lambs and 1–5 days for hisar lambs across all regions. This disparity in the duration of dyspepsia between the two breeds of lambs is attributed to our investigation focused on identifying the onset period of liver detoxification in hisar lambs. The earlier maturation of the morpho–functional development of the digestive system, including the liver, in lambs of other colors can account for this phenomenon.

The mean weight of goats produced from healthy cows in the specific conditions of “Olg‘a” LLC, a cattle breeding company located in the Nurabad district of the Samarkand region, was recorded as $3.25+0.02$ kg, indicating normotrophy. The occurrence of dyspepsia in lambs was observed within the initial 1–2 days following birth. The afflicted lamb exhibited many dyspeptic symptoms, including general weakness and reduced movement, diarrhea, dehydration, lowered pulse, heartburn, stomach tenderness upon palpation, and subsequent peripheral hypothermia. The disease was transmitted at an intermediate level. A mortality rate of 30% was seen among lambs within the 7–10 day period following the onset of the disease.

The mean weight of lambs born from ewes with ketonuria during the late stages of gestation was $3.45+0.03$ kg, indicating the occurrence of fetal hypertrophy in association with this condition. The occurrence of dyspepsia in these lambs primarily manifested within the initial 72–96 hours after birth. In addition to experiencing common dyspeptic symptoms, the affected lamb exhibited indications of toxemia, such as insensitivity to external stimuli, hyperemia of mucosal membranes, and clonic and tetanic tremors. Furthermore, more pronounced manifestations of pulse decrease were observed in the lamb. The severity of the sickness was significant. A significant proportion, specifically 60%, of the lambs succumbed to sickness within a period of 6 to 7 days. The mean weight of lambs born from ewes experiencing alimentary osteodystrophy in the late stages of gestation was recorded as $2.90+0.02$ kg. This indicates that fetal hypotrophy was observed at a mild level during the occurrence of this condition. The occurrence of dyspepsia in lambs primarily took place within the initial 5–6 days after birth, and the condition was characterized by nonspecific symptoms associated with dyspepsia. The disease exhibited moderate severity, resulting in a mortality rate of 40% among the lambs within a timeframe of 10–11 days.

The mean weight of lambs born from ewes experiencing alimentary dystrophy throughout the advanced stages of gestation was recorded as $2.75+0.01$ kg, indicating the presence of severe fetal hypotrophy in this condition. The occurrence of dyspepsia in lambs primarily took place within the initial 8–10 days after birth, and the condition was characterized by nonspecific symptoms associated with dyspepsia. The severity of the sickness was classified as moderate, resulting in a mortality rate of 50% among the lambs within a span of 12–13 days.

The mean live weight of lambs born from ewes experiencing hepatodystrophy in the late stages of gestation was recorded as 3.0 ± 0.03 kg. Notably, while there were no significant alterations in the fetal live weight during this condition, the occurrence of dyspepsia in these lambs primarily manifests within the initial 4–5 years of their lifespan. The observation of toxemia signs, as well as general dyspeptic symptoms, was documented in the afflicted lambs over a period of several days. The severity of the sickness resulted in a mortality rate of 70% among the lambs within the 7–8th day.

The initial stages of dyspepsia in lambs were characterized by minimal alterations in blood morphology and biochemical composition, as observed by inspection. During the second and third days, there was a notable increase of around 25–40% in the levels of hemoglobin and erythrocytes in the blood. Additionally, the hematocrit exhibited a corresponding increase of approximately 25–30%. The lambs born from cows afflicted with ketonuria and hepatodystrophy, and experiencing dyspepsia, exhibited a reduction of around 40–50% in the blood’s alkaline reserve, with a corresponding increase of approximately 40–50% in the concentration of ketone bodies.

The findings from the pathology–anatomical examination of the deceased lambs revealed that the primary characteristic symptom observed in lambs experiencing dyspepsia is catarrhal–hemorrhagic gastroenteritis, together with the presence of coagulated pieces retained in the pre–stomach sections and spleen atrophy. Furthermore, the lambs born from cows afflicted with ketonuria and hepatodystrophy exhibited a range of dystrophic alterations in the liver, as well as diverse modifications in the kidney and cardiac muscles.

Conclusion

1. Incidence rates of dyspepsia in lambs vary across different regions of our Republic. Specifically, in desert areas, the incidence rate ranges from 30–40% in karakol lambs and 20–30% in hisar lambs. In mountain areas, the incidence rates are approximately 25–30% and 20–30% respectively. The prevalence of dyspepsia in lambs across all locations ranges from 30 to 10–20%. The duration of dyspepsia in karakol goats is typically 1–7 days, whereas in hisar lambs it lasts for 1–5 days;
2. The main causes of dyspepsia in lambs are diseases such as ketonuria, osteodystrophy, alimentary dystrophy, and hepatodystrophy, which result from delayed morpho–functional maturation of the organs in the digestive system, particularly the gastrointestinal tract and liver, as well as metabolic disorders in the lambs’ bodies. Additionally, dyspepsia in lambs can also be attributed to violations of the rules of active grazing;
3. The clinical manifestations of dyspepsia in lambs are closely associated with physiological and pathological changes occurring in the lamb’s body. These changes include metabolic disorders that occur during the antenatal development period. Common clinical signs of dyspepsia in lambs include lethargy and inactivity, diarrhea, dehydration, bradycardia, heartburn, peripheral hypothermia, toxemia (characterized by insensitivity to external stimuli, hyperemia of mucous membranes, clonic and tetanic tremors, among others), abdominal pain upon palpation, catarrhal–hemorrhagic gastroenteritis upon examination, retention of coagulated fragments of uric acid in non–functioning pre–stomach sections, and spleen atrophy. Furthermore, the lambs born from cows afflicted with ketonuria and hepatodystrophy exhibited a range of dystrophic alterations in the liver, as well as diverse modifications in the kidney and cardiac muscles;
4. During the occurrence of dyspepsia, distinct alterations may be noticed in the morphological and biochemical parameters of blood. Specifically, on the second to third day of the sickness, there is a notable increase of 25–40% in hemoglobin and erythrocyte levels in the blood, as well as a corresponding rise of 25–30% in the hematocrit index. Furthermore, there is a reduction of around 40–50% in the alkaline reserves present in the blood, accompanied by a corresponding increase of 40–50% in the concentration of ketone bodies.

References

1. O‘zbekiston Respublikasi Prezidentining 2020-yil 29-yanvardagi «Chorvachilik tarmog‘ini davlat tomonidan qo‘llab-quvvatlashning qo‘shimcha chora-tadbirlari to‘g‘risida»gi PQ -4576-sonli qarori.
2. O‘zbekiston Respublikasi Prezidentining 2022-yil 8-fevraldagi «Chorvachilikni yanada rivojlantirish va ozuqa bazasini mustahkamlash chora-tadbirlari to‘g‘risida»gi PQ-121-sonli qarori.
3. Ro‘ziqulov N.B. Yosh hayvonlar va parrandalar terapiyasi. Darslik. Toshkent, “Fan ziyosi”, 2021. – B. 70-81.
4. Bakirov, B., Daminov, A. S., Ro‘ziqulov, N. B., Toylaqov, T. I., & Saydaliyev, D. (2019). Qurbonov Sh. *Boboyev OR, Xo‘djamshukurov A. Hayvonlar kasalliklari. Ma‘lumotnoma. Ikkinchi nashri. Samarqand*, 344-347.

5. Практикум по внутренним болезням животных / Под общ. ред. Щербакова Г.Г., Яшина А.В., Курдеко А.П., Мурзагулова К.Х.: Учебник. – СПб.: Издательство «Лань», 2021. – С. 543.
6. Петрянкин Ф.П., Петрова О.Ю. Болезни молодняка животных: Учебное пособие для СПО. – Санкт-Петербург: Лань, 2021. – С. 352.
7. Бакиров, Б., & Рузикулов, Н. Б. (2017). Причины и ранняя диагностика нарушений метаболизма и дистрофии печени у коров в республике Узбекистан. *Ветеринария*, (5), 49-53.
8. Baxtiyar, B., Nuriddin, R., Oybek, B., & Hokimjon, K. (2017). Etiopathogenesis, hepatogenic implications and early diagnosis of disorders of protein metabolism in productive animals in Uzbekistan conditions. *IJAR*, 3(2), 272-277.
9. Bakirov, B., Ruzikulov, N. B., & Haitov, N. (2015). Method of complex dyspancerization of cows and sheep. *Certificate the deposit of intellectual property. Registration*, 29(01), 2273.
10. Ruzikulov, N. B. (2021). Main causes and development mechanisms of Karakol sheep Ketonuria. *Asian Journal of Multidimensional Research (AJMR)*, 10(3), 556-559.
11. N Ruzikulov, S Askarov, N Rasulov, O Boboev. (2022). Results of treatment of lambs dyspepsia. *Наука и просвещение: актуальные вопросы, достижения и инновации. Сборник статей VIII Международной научно-практической конференции. Пенза, 2022.* 226-229.
12. Asqarov S.S., Yunusov X.B., Ro‘ziqulov N.B. Qo‘zilar dispepsiyasining klinik belgilari va ularning etiopatogenetik asoslari // *Veterinariya meditsinasi*. – 2023. №8. – 18-19 bet.
13. Маматов Ш.С. Этиология, диагностика, лечение и профилактика диспепсии телят: Автореф. дис. ... канд. вет. наук. – Самарканд, 1996. – С. 19.
14. Эшбуриев Б.М. Бўғоз сигирларнинг эндемик микроэлементозлари, уларнинг оқибатлари ва профилактика чора-тадбирлари: Автореф. дис. ... докт. вет. наук. Самарканд: СамҚХИ, 2016. – 72 бет.
15. А.В.Манасян, Г.Р.Петоян, А.М.Шахбазян. “Активность ферментов пищеварительной системы у телят при диспепсии”. Армянская СХА, 2003.
16. Bradford P.Smith, David C. Van Metre, Nicola Pusterla. *Large Animal Internal Medicine*. Sixth Edition. ELSEVIER. Printed in the United States of America, 2020 by. - P. 1874.

Copyrights

Copyright for this article is retained by the author(s), with first publication rights granted to the journal.

This is an open-access article distributed under the terms and conditions of the Creative Commons Attribution license (<http://creativecommons.org/licenses/by/4.0/>).