ACADEMICIA
An International Multidisciplinary Research Journal
(Double Blind Refereed & Peer Reviewed Journal)

DOI: 10.5958/2249-7137.2021.00988.5

PECULIARITIES OF METABOLIC DISORDERS IN ENDEMIC COWS

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ABSTRACT

In the article there is adduced the information distribution, etiology, specific endo-crinological and metabolic aspects of Endemic goiter of cows farms of Samarkand, Kashkad. The results of the studies show that in all regions of the country where the studies were conducted, endemic goiter in breeding cattle manifests itself in three types: latent goiter, hypothyroidism, and hyperthyroidism. The results of the analysis of the nutritional value of the rations show that in all farms the share of high-quality roughage in them was no more than 12-15%.

KEYWORDS: *Endemic goiter, metabolism, thyroid, hypothyroidism, hyperthyroidism, T_4, T_3.*

INTRODUCTION

One of the most significant obstacles to the implementation of tasks to deepen the agrarian reform specified in the "Strategy of actions in five directions of development of the Republic of Uzbekistan for 2017-2021"; as well as in Resolutions No. 4841 "On additional measures to deepen economic reforms in animal husbandry" dated March 16, 2017 and PD-4576 "On additional measures of state support for the animal husbandry industry" dated January 29, 2020, prepared personally by the President of Uzbekistan, in the Laws of the Republic of Uzbekistan No. LRuZ-97 "On the prevention of iodine deficiency diseases" dated May 3, 2007 and No. Law of the Republic of Uzbekistan-397 "On veterinary medicine" dated December 29, 2015 (Collection of legislation of the Republic of Uzbekistan, 2007, No. 17-18, Art. 175; 2015 No. 23, Art.) And the Decree of the President of the Republic of Uzbekistan No. PD-5696 "On measures to radically improve the system of public administration in the field of veterinary medicine and animal husbandry" dated March 28, 2019, are diseases of imported breeding cattle.

THE MAIN FINDINGS AND RESULTS

It is known that endemic goiter (Struma endemica) is a disease that develops due to iodine deficiency and is accompanied by specific morpho-functional changes in the thyroid gland [1, pp. 478-540; 3, pp. 157-160; 5, p. 543].

The results of studies carried out by us over the past 10-15 years have shown that endemic goiter and metabolic disorders associated with it are relatively widespread among imported cattle and their offspring [2, pp. 391-393; 7, p. 340].

As a result of thyroid dysfunction and its metabolic consequences in cows in a relatively short period of time, there is a decrease in live weight by 20-30%, milk yield by 25-50%, as well as deterioration in fertility and product quality. As a result, farms endure an average of 1.5-2.5 million soums per cow per year. Therefore, studies aimed at increasing the productivity and reproduction of cows by preventing endemic goiter and metabolic disorders associated with it are relevant [4, p. 72; 6, pp. 210-13; 8, p. 437].

The aim of the study is to develop scientifically based measures for early diagnosis, effective therapy and group prevention of endemic goiter and metabolic disorders associated with it in breeding dairy cows.

Research objectives:

- To determine the spread and economic damage of endemic goiter and metabolic disorders associated with it in breeding cows;

- To identify the main nutritional and endemic causes;

- To establish clinical-physiological, hemomorphic-biochemical, hepatological and immunological changes characteristic of endemic goiter and metabolic disorders associated with it in breeding cows;

- to develop methods for early diagnosis of endemic goiter and metabolic disorders associated with it in breeding cows;

- through alternative experimental research to develop effective means and methods of therapy for endemic goiter and metabolic disorders associated with it in breeding cows;

- through alternative experimental studies to develop effective means and methods of group prevention of endemic goiter and metabolic disorders associated with it in breeding cows;

- to develop recommendations for early diagnosis, effective treatment and group prevention of endemic goiter and metabolic disorders associated with it in breeding cows and introduce them into production.

Material and research methods

The studies were carried out in 2015-2020 in cows and heifers of the black-and-white breed of the educational and experimental farm of the Samarkand Institute of Veterinary Medicine (Akdarya district of the Samarkand region), in cows and heifers of the local and Simmental breeds of the Fazo and OmadliZarnigor farm in the Chirakchi district , black-and-white breed LLC "Karpat-olachashmasi" of Yakkabag district of Kashkadarya region, in cows and heifers of the local breed of the farm "ZoirAbbosAzizjon" of Kogon district of Bukhara oblast.

Healthy and sick with endemic goiter, cows and heifers in the context of breed, age, seasons, lactation periods and types of diet, were subjected to clinical-physiological, hemo-morpho-biochemical, thyroid-immunological, and samples of the thymus gland were forced to leave cows - organoleptic and specific morphometric research.

Analysis of research results

The results of the studies show that in all regions of the country where the studies were conducted, endemic goiter in breeding cattle manifests itself in three types: latent goiter, hypothyroidism, and hyperthyroidism. In addition to the symptoms of the general metabolic syndrome (problems with milk production and fertility), sick animals are characterized by a peculiar structure of the body (ovality or flatness), the presence of hairless (forested) or hairless areas on the skin, the formation of "false mushrooms" and "false eyebrows", in an average of 30-50% of cows and heifers on palpation morphological changes (increase or decrease) in the thyroid gland.

The results of the study of blood samples for indicators reflecting the state of the thyroid gland functions were characterized by strict thyroid specificity. So the average level of thyroxine (T_4) in the blood of healthy cows was 3,6±0,15-5,36±0,21 μg%, triiodothyronine (T_3) in the blood serum - - 1,25±0,10-1,50±0,13 ng / ml. As the disease progressed, significant changes in these parameters were observed, in particular, an increase in serum T_3 (on average up to 2,45±0,22-2,9±0,25 ng / ml) and a decrease in the amount of T_4 in the blood (up to 3,4±0,33-4,1±0,36 μg%). During the chronic course of the process, these changes deepened.

General endemic metabolic disorders (GEMD). Studies have shown that in about 30-60% of cows of experimental farms, along with specific thyroid changes, profound metabolic disorders were established, the dominant type of which was a violation of protein-carbohydrate-lipid metabolism, which was characterized by a decrease in hemoglobin (up to 66-84 g / l) and the number of erythrocytes (up to 4.4-4.9 million / μl) in the blood, as well as total protein (due to albumin), glucose and reserve alkalinity in the blood serum.

With GEMD, as a result of endemic, especially after the third and fourth calving, degenerative changes in the liver develop, which are characterized by an increase and soreness of the organ on palpation. Bile secretion, albumin-synthesizing, urea-synthesizing, lipid-synthesizing, enzyme-synthesizing and bilirubin-conjugating functions of the liver are impaired. Such disturbances are especially evident in highly productive cows, in conditions of hay-concentrate and straw-concentrate types of ration compared to silage-concentrate.

The results of the analysis of the nutritional value of the rations show that in all farms the share of high-quality roughage in them was no more than 12-15%. The degree of provision of rations for sugar was no more than 40-50%, for carotene - 50-60%, phosphorus - 70-75%, for digestible protein - 75-80%, for iodine - 45-55%, for calcium - 130- 150%. The calcium-phosphorus ratio was 2-2.5, the sugar-protein ratio was 0.45-0.55.

CONCLUSIONS

1. In the conditions of the farms of the Republic of Uzbekistan, the environment of pedigree dairy cows, the infection with endemic goiter is on average 30-60%, the main etiological factors of which are the lack of high-quality roughage in the diet, the tyrodendemicity of the regions, as well as its low availability in sugar, carotene, phosphorus, digestible protein and iodine as well as low sugar-protein (0.45-0.55) and high calcium-phosphorus (2.2-3.0) ratio in it.

2. When assessing the state of the thyroid gland in pedigree dairy cows, along with specific thyroid changes, it is advisable to take into account general metabolic disorders and the functional state of the liver.

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