Khazar Journal of Science and Technology Volume 8 №1 2024, 15-19
 DOI: 10.5782/2520-6133.2024.8.1.15

Distribution of Highly Yielding Dairy Cows Pododermatitis by Age Groups

Akhund-zadeh Khadji
Scientific Researches Institute of Veterinary, Baku, Azerbaijan
axundovhaji@gmail.com

Abstract

Clinical studies were conducted on 1,248 heads of highly yielding dairy cows (Simmental, Holstein Friesian, black-and-white and Swiss breeds) in private livestock farms in Siyazan, Masally, Absheron and Shamakhi districts of Azerbaijan. In Siyazan district 238 cows of black-and-white breeds, in Masalli district – 363 heads of Simmental and Holstein-Friesian breeds, in Absheron district - 291 heads of Simmental and Holstein-Friesian breeds and in Shamakhi district – 356 ones of Swiss brown and black-and-white breeds of different age groups (calves up to 2 years old, from 2 to 5 years old and over 5 years old) were conducted researches. It has been established that a high degree of pododermatitis morbidity is observed in cows of black-and-white and Holstein-Friesian breeds at the age of 5 years and older.

Keywords: highly yielding dairy cows, farm, pododermatitis, breed, age

Introduction

The meeting of the nutritional needs of the population is significant in the development of livestock. Innovation to maximize food production through the application of intensive technologies, improved nutrition and supplementation is the most important challenge of our time.

Livestock farming is one of the most profitable branches of agriculture and it plays a key role in providing the population with foodstuffs. The living standards and welfare of the population depend on the development of animal husbandry. Therefore, an essential task in the development of livestock industry is to keep increasing the production of milk and meat on the basis of improvement of livestock productivity and growth of livestock population.

One of the factors limiting the development of this area is various diseases, among which non-communicable diseases play an important role. Among non-communicable diseases a significant place is given to pododermatitis of cows,

during which animals are lying down for a long time, they have local inflammation and swelling of the skin of periople, pulp, interhoof gap, as well as phlegmons in the periople area. Lack of daily movement, systematic hoof cleaning, feeding and husbandry inaccuracies are the most common causes of hoof diseases, including pododermatitis. In the acute form of pododermatitis, pus with smell is secreted, the general body temperature rises, pain and swelling in the hoof area are present and the condition of the animal gets worse (Berdogulov, 2017; Mishchenko, 2008; Panko et al., 2003).

Obtaining healthy, highly productive livestock in case of following the rules of husbandry, as well as therapeutic and prophylactic measures, contributes to the profitable development of the farm. Despite the measures taken against this disease, pododermatitis still causes significant economic damage to livestock farming (Vasiliev, 2022).

Pododermatitis in cows is associated with motor impairment, aggravation of general state, reduction of meat and milk productivity, which causes significant economic damage for the farm. Pododermatitis in cows is associated with motor impairment, aggravation of general state, reduction of meat and milk productivity, which causes significant economic damage for the farm. It is associated with a reduction of reproductive system and productivity of cattle (Bezborodova et al., 2021; Kvochko, 2010).

Early detection and prevention of various diseases and development of control measures against them is important in the development of livestock farming.

The lack of researches and data on bovine pododermatitis in Azerbaijan emphasizes the need for a detailed study of this disease in developing effective control measures.

Due to the wide spread of pododermatitis in cattle farms of Azerbaijan and the damage caused by this disease, we set a goal to study the rate of pododermatitis in high-yielding cows by age groups in cattle farms of the republic.

Materials and methods

Investigation to determine the prevalence of pododermatitis in cows was carried out in private livestock farms in the Masally, Siyazan, Shamakhi and Absheron regions. The 1248 heads of highly productive cows (Simmental, Holstein-Friesian, Black-and-White and Swiss breeds) of various age groups (calves under 2 years old, from 2 to 5 years old and over 5 years old) were studied. The number of studied cattle were distributed by regions as follows: 238 heads of black-and-white cows in the Siyazan region; 363 heads of Simmental and Holstein-Friesian breeds in the Masally

region; 291 heads of Simmental and Holstein-Friesian breeds in the Absheron region; 356 heads of Swiss and black-and-white cow breeds in the Shamakhi region.

Clinical studies to identify pododermatitis in cows were carried out in the following sequence of actions: position and placement of the limbs was paid special attention, the condition of the hooves, then the shape and size of the affected hooves was determined, as well as swelling and the presence of wounds in the toe area and the presence of cracks and other defects.

From the plantar side of the hooves: the shape of the sole, the degree of its convexity or concavity, the excessive corneal growth and the sole were examined. Using the palpation method, we determined soreness, tissue density, local temperature and pain sensitivity, quality, smell, as well as the color and condition of the exudate of the affected hooves. To determine the local hoof temperature, it was compared with the opposite hoof. The temperature sensitivity was determined using the dorsal surface of the fingers.

Results and Discussion

As a result of clinical investigation in private livestock farms at the Siyazan, Masally, Absheron and Shamakhi regions, the widespread pododermatitis in all breeds (Simmental, Gontstein-Friesian, Black-and-White and Swiss breeds) of cows was established (Table 1).

Table 1. Distribution of cattle pododermatitis in Siyazan, Masally, Absheron and Shamakhi regions

No	Regions	Studied animals (heads)	Sick animals (heads)	Prevalence, %	Breeds of cattle	Distribution by the breed, %
1	Siyazan	238	49	20,6%	White and Black	49
2	Masally	363	81	22,3%	Simmental Holstein-Friesian	24 57
3	Absheron	291	56	19,2%	Simmental Holstein-Friesian	18 38
4	Shamakhi	356	78	21,9%	Swiss White and Black	20 58
Total:		1248	264	21,2%	White and Black	49
					Simmental	42
					Holstein-Friesian	95
					Swiss	20

As can be seen from Table 1, as a result of clinical studies of 1248 heads of highly productive cattle (Black-and-White, Simmental, Holstein-Friesian and Swiss),

pododermatitis was detected in 264 heads (21.2%). In the Siyazan region 49 sick animals (20.6%) of the black-and-white breed were registered. Also, in the Masaly district 81 sick animals (22.3%), of which 24 and 57 heads are Simmental and Holstein-Friesian breeds, accordingly, were registered. In Absheron: 56 heads (19.2%), of which 18 heads are Simmental and 38 heads are Holstein-Friesian breeds; in the Shamakhi region: 78 heads (21.9%), of which 20 heads of the Swiss and 58 heads of the black-finger breed were registered.

As can be seen from Table 1, the highest extensiveness of invasion is observed in cattle of the Black-and-White and Holstein-Friesian breeds. In the Shamakhi region, the prevalence of pododermatitis in 58 heads of the black-and-white breed are registered. In the Masally district in 57 heads of Holstein-Friesian breeds are registered.

As a result of our investigation, the high level of pododermatitis distribution in black-and-white and Holstein-Friesian cattle was established.

Table 2. Dynamics of prevalence by pododermatitis in different age groups of cattle

No	Regions	Age group (years)	Total studied (heads)	Studied by age groups (heads)	Registered by age groups (heads)	Incidence by age groups
1	Siyazan	1 - 2	238	75	2	2,7
		from 2 till 5		78	4	5,1
		from 5, and elder		85	15	17,6
2	Masally	1 - 2	363	110	2	1,8
		from 2 till 5		128	3	2,3
		from 5, and elder		125	27	21,6
3	Absheron	1 - 2	291	96	1	1,0
		from 2 till 5		94	2	2,1
		from 5, and elder		101	23	22,7
4	Shamakhy	1 – 2	356	120	2	1,7
		from 2 till 5		114	2	1,8
		from 5, and elder		122	24	19,7
Total		1- 2	1248	402	7	1,7
		from 2 till 5		414	11	2,7
		from 5, and elder		432	89	20,6

The dynamics of the prevalence of pododermatitis in cattle has been studied in different age groups (heifers: from 1 to 2 years, from 2 to 5 years and 5 years and older).

As can be seen from Table 2, the highest level of prevalence by pododermatitis was found in cattle aged 5 years and older. Thus, in the Siyazan region, cattle pododermatitis is equal 17.6%, in the Masally region (21.6%), in the Absheron region (22.7%) and in the Shamakhi region (19.7%). The highest prevalence level by pododermatitis is observed in the Absheron region in cows over 5 years old and older age groups (22.7%).

The spread of pododermatitis in cattle is mainly due to the fact that preventive measures are insufficiently and not always taken. When manure is not regularly removed from walking areas in industrial complexes in rainy weather, maceration of the hoof horn occurs, which can also be the cause of pododermatitis.

To prevent pododermatitis, farms must carry out a set of preventive veterinary and sanitary measures, systematic hoof care, trimming, and clinical examination of hooves. Thus, timely detection and treatment of pododermatitis helps to increase safety and reduce morbidity among livestock. Proper and complete feeding, maintenance, as well as regular change of bedding is a necessary condition for preventing the disease. In this regard, it is necessary to promptly identify animals with diseased hoofs and eliminate the possibility of mechanical damage to the tissues of the distal part of the limbs. Regular observance of proper order in livestock premises, creation of normal zoohygienic conditions, periodic disinfection of premises and organization of hoof care is important in the prevention of pododermatitis in cattle.

References

Berdogulov, E.G. (2017). Distribution and etiology of limb manifestations in cows. In the collection: Current issues of the non-infectious nature of animals. materials of the International Scientific and Practical Student Conference. 22-25.

Bezborodova, N. A., Poryvaeva, A.P., Kozhukhovskaya, V.V., Lysova, Ya.Yu., Malkov, S.V. & Oparina, O.Yu. (2021). Clinical and laboratory diagnosis of interdigital dermatitis in highly productive dairy cattle - Veterinary Medicine. 11(10).

Kvochko, A. N. (2010). Diagnostic and treatment-and-prophylactic measures for modern limbs in cattle: educational manual, StGAU. 152 p.

Mishchenko, V. A. (2008). The problem of diseases of the distal limbs in highly productive cows. Veterinary Medicine of Kuban – Krasnodar. 4, 4-7

Panko, I. S., Lukyanovsky, V. A. & Mironenko, A. K. (2003). Deformation of the hooves of highly productive animals. Veterinary consultant. 5, 29–30.

Vasiliev, V. K. (2022). Veterinary ophthalmology and orthopedics: a textbook for universities. St. Petersburg: Lan. 188 p.