Clinical and epidemiological characteristics of the of false pregnancy in Zaanen goats

K.O. Shatsky, *G.P.* Dyulger*, and *I.V.* Akchurina

Russian State Agrarian University – Moscow Timiryazev Agricultural Academy named after K.A. Timiryazev, Moscow, Russian Federation

Abstract. The overall prevalence of pseudopregnancy and an assessment of a number of risk factors (season of the year, parity and milk productivity) on the incidence of goats of the Zaanen breed with false pregnancy (hydrometra) was studied. The research was carried out on a goat-breeding dairy farm of LLC Eco Farm Klimovskaya in the Kaluga region of the Russian Federation. The disease was diagnosed by ultrasound examination in all months and periods of the year. The seasonal increase in morbidity was noted at the peak of the breeding season in the autumn months of the year. The highest incidence rate (11.97%) was recorded in parous goats who have given birth one or two with a milk production level of 2 kg/day or less, the lowest once (3.92%) – in nulliparous females. The overall prevalence of pseudopregnancy was 9.31%.

1 Introduction

False pregnancy, or pseudopregnancy, is a rather common reproductive pathology in dairy goats, the leading and mandatory diagnostic symptom of which is a hydrometra - accumulation of a variable amount of sterile serous fluid in the uterine cavity [15]. Corpus luteum retention always precedes and accompanies the development of hydrometra. Spontaneous regression of the persistent corpus luteum leads to interruption of pseudopregnancy and emptying of the hydrometra [5]. According to the profile of progesterone in the blood, it was found that the duration of false pregnancy is an average of 150.3±23.5 days [8].

In Russia, practically no studies have been conducted to survey the prevalence of hydrometra in dairy goats and to determine the risk factors associated with this disease [5]. At the same time, the available literature provides various data on the prevalence and risk factors for the development of pseudopregnancy in goats. According different authors the overall prevalence of hydrometra in goats can vary in wide range - from 1.37% to 55.56% [1-7, 9-13, 15].

The aim of this study was to investigate epidemiological features of hydrometra in in Zaanen goats bred on the goat dairy farm of LLC Eco Farm Klimovskaya in the Kaluga region of the Russian Federation.

* Corresponding author: dulger@rgau-msha.ru

2 Material and methods

The work was carried out at the commercial goat–breeding dairy farm LLC Eco Farm Klimovskaya in the Yukhnovsky district of the Kaluga region, the village of Savolinka. The farm specializes in breeding Zaanen goats, acquired in Austria on farms with BIO status. The number of dairy goats at farm is 400 head.

All year round, a nulliparous goat at breeding age and parous milking goats were kept in the same building in group pens 10-15 m long and 2-2.5 m wide (7-15 heads in each). The animals were fed 3 times a day with mixed hay, corn silage and concentrates. Goats were milked twice daily on the Parallel milking platform.

To investigate the prevalence rate and risk factors of hydrometra in the period from March 2, 2020 to March 10, 2021, a screening ultrasound examination of nulliparous goats at breeding age and parous milking goats of the Zaanen breed of the first and second lactation and parity was performed monthly.

Ultrasound diagnostics of pseudopregnancy and its differentiation from physiologically developing pregnancy were performed transabdominally with a Draminski 4 Vet mini ultrasound diagnostic device using 2...8 MHz convex transducers. The goats were scanned systematically in a standing position, on the milking platform or in the goat pen.

Physiologically developing pregnancy was diagnosed approximately 50...80 days after mating by ultrasound imaging placentomes and viable fetuses.

The ultrasonographic diagnosis of pseudopregnancy was based on the detection of significant amount hypoechogenic fluid in the uterine cavity in the absence of fetuses and placentomes.

All digital materials obtained during the work were processed by the method of variation statistics on a personal computer using the Microsoft Excel program.

3 Results and discussion

In the period from March 2, 2020 to March 10, 2021, a screening ultrasound examination of 153 nulliparous and 309 parous goats of the Zaanen breed of the first and second lactation and parity was carried out. The overall prevalence of pseudopregnancy was 9.31% (tabe1). This result is in line with the works of many researchers who reported a prevalence of hydrometra in goats at a level 9.0 – 10.6% [1, 7, 10, 11, 12]. This result is in line with the works of many researchers who reported a prevalence of hydrometra at a level 9.0 – 10.6% [1, 7, 10, 11, 12].

Table 1. The prevalence rate and incidence of hydrometra in nulliparous and parous goats of the Zaanen breed examined for pregnancy and pseudopregnancy at the Klimovskaya Eco Farm LLC

Lactation number and parity	Number of goats examined	Frequency of detection of hydrometra	
		n	%
0	153	6	3.92
1	190	22	11.58
2	119	15	12.61
1+2	309	37	11.97
Total	**462**	**43**	**9.31**

As can be seen from the data in table 1, the incidence of goats by hydrometra is significantly influenced by lactation number and parity. The lowest incidence rate (3.92%)

was recorded in nulliparous goats, the highest ones (11.97%) – in milking goats, who gave one or two kidding. There was a slight increase in the prevalence of the disease in dairy goats as the lactation number and parity increased - from 11.58% to 12.61% after the first and second kidding, respectively These is in some agreement with A.M. Almubarak et al. [1] who reported that the prevalence of hydrometra in goats progressively increased with parity.

Significant differences in the dynamics of the incidence of goats by hydrometra by season of the year were also revealed (Table 2.)

Table 2. Dynamics of the incidence of goats by hydrometra by season of the year

Season of the year	Goats examined, N	Frequency of detection of hydrometra	
		n	%
Spring	214	9	4.21
Summer	261	9	3.45
Autumn	296	22	7.43
Winter	316	3	0.95

As can be seen from the data in the table. 2 the peak incidence of goats by hydrometra (7.43%) occurs in the autumn months (i.e., the peak of the sexual season), the nadir – in the winter months of the year (0.95%). In spring and summer, the frequency of hydrometra detection in the surveyed goat population was lower than in the autumn months, but higher than in the winter months and amounted to 4.21 and 3.45%, respectively. Significantly higher number of pseudopregnancy cases during breeding season was observed also M.M. Batista et al. [3] and R. Van den Brom et al. [14].

Interesting data were obtained by analyzing the incidence of goats with a hydrometra depending on the level of their milk productivity (Table 3).

Table 3. The frequency of occurrence of hydrometra depending on the dairy productivity of goats

Average daily milk yield	Goats examined, n	Frequency of detection of hydrometra	
		n	**%**
2 liters or less	45	10	22.22
2.1-3 liters	108	19	17,59
3,1 liters or more	156	8	5.13

As can be seen from the table.3 the largest number of cases of hydrometra (22.22%) was observed in the group of goats with an average daily milk yield of 2 liters or less, the average (17.59%) – in the group with an average daily milk yield of 2.1-3 liters of milk and the smallest (5.13%) - in the group of goats with an average daily milk yield of 3,1 liters or more. Thus, it was found that highly productive animals with an average daily milk yield of more than 3.0 liters of milk are less predisposed to the development of hydrometra (by 1.26 and 4.33 times) than goats with an average daily yield of 2.1-3.0 and, especially, 2 or less liters of milk. This can be explained by the high stress of physiological processes in the

body of highly productive animals, the negative energy balance associated with hyperproduction of milk and their negative effect on the timing of the resumption of functional activity of the ovaries and the formation of full-fledged cycles after kidding.

The available literature provides contradictory data on the effect of dairy productivity on the frequency of hydrometra in milking goats. According to some investigations [7, 12], high milk productivity is one of the risk factors for the development of pseudopregnancy, according to others [1, 15] this factor does not affect the frequency of hydrometra in dairy goat herds.

4 Conclusion

Pseudopregnancy (hydrometra), apparently, is a multifactorial pathology and is recorded on average in 9.31% of the Zaanen goats. The disease occurs in all climatic periods of the year. The seasonal increase in morbidity occurs at the peak of the breeding season – in the autumn months of the year. The high-risk group consists of parous goats that have given birth once or two with an average daily milk yield of 2 liters or less.

Conflict of interest

The authors declare no conflicts of interest. There was no funding for the work.

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