

# Clinical symptoms of cows with purulent-catarrhal endometritis of fungal etiology, fungal species and their sensitivity to drugs

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**Abstract.** In the article, the prevalence of cows with mycotic etiology purulent-catarrhal endometritis, clinical symptoms and types of fungi and their sensitivity to drugs were studied in the conditions of farms specializing in cattle breeding of the districts of Samarkand region. It was analyzed that in endometritis of bacterial-mycotic etiology, the body temperature and heart rate, high breathing, and their sharp increase with the increase of the inflammatory process in the uterus, as well as the presence of traces of white loose films on the lower surface of the vaginal mucosa, are the main clinical signs. When examining samples taken from the uterus of cows infected with purulent-catarrhal endometritis of bacterial and mycotic etiology, *Candida albicans* 41.8-45.2%, *Candida glabrata* 26.8-29.2%, and *Candida krusei* 26.0-30.0% and it was studied that the highest indicator of the zones formed in terms of antibiotic sensitivity of microbes was observed in discs soaked with fluconazole and ketoconazole, and the lowest indicator appeared in discs soaked with nystatin and emulsion.

## 1 Introduction

When the general and local nonspecific resistance decreases in animals, the increase of potentially dangerous microorganisms (staphylococcus, escherichia, proteus, blue pus bacillus) that exert their pathogenic effect individually or in association serve as the causes of nonspecific inflammatory diseases of the organs. Microorganisms enter the genital tract of cows from the external environment during sanitary-hygienic violations of the conditions of storage, care and operation [4].

According to some authors [2], microbial and fungal factors are particularly important in the development of postpartum diseases in cows. The study and timely identification of microorganisms is necessary for the selection of effective therapeutic agents for the treatment of postpartum endometritis in cows [5].

The study of the microflora in uterine secretions in postpartum endometritis caused by placental abruption and injuries of the reproductive tract in cows in the Middle Volga farms showed its full microbial character, the microflora was composed of streptococci,

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staphylococci, and *Proteus* [1, 7] isolated conditionally pathogenic microflora in 43% of the secretions of acute and chronic endometritis in cows and in various associations in 56.4%.

Placental retention in cows caused the development of acute postpartum endometritis, when examining uterine secretions in a complex in the Ulyanovsk region, *Staphylococcus aureus*, *Escherichia coli*, *Bacillus vulgaris*, *Pneumonia streptococcus*, *Aspergillus flava* and *agalactia streptococcus* were detected. Among them, pathogenic properties were noted in 28.7% of microorganisms, and in 71.2% they were absent. When the antibiotic sensitivity of the isolated microorganisms was tested, it was found that none of the widely used antibiotics inhibited the growth of the majority of the isolated strains, which is an incentive to find new drugs [6].

In post-partum catarrhal-purulent endometritis in cows, exudate accumulates in the uterus, which serves as an excellent environment for the growth of microorganisms. Microbiological examination of the contents of the uterus revealed a large number of microbes, most of which are permanent residents of the urogenital tract [8, 10-11] according to the authors, *Escherichia coli* strains are the main pathological agents of the development of postpartum endometritis in cows, which cause 40% of cases of the development of the inflammatory process in the uterus after childbirth. After calving, conditionally pathogenic microflora is detected in the genitals of 90% of cows, which can remain there for 50 days [9].

Uterine secretions from cows diagnosed with postpartum endometritis were found to contain 33.4% *Escherichia coli*, 29% *Staphylococcus aureus*, 4.2% *Staphylococcus aureus* and *Proteus vulgaris*, with a higher association of *Staphylococcus* and *Escherichia coli*. The highest pathogenicity to laboratory animals was observed in the association of bacteria and fungi [3].

## 2 Materials and methods

Bacterial and mycotic etiologies of purulent-catarrhal endometritis in cows, clinical signs and types of fungi and their sensitivity to drugs were investigated. The investigation related to identification, Samarkand region districts was conducted in the farms specializing in animal husbandry and in the laboratories of the Samarkand State Veterinary Medicine, Animal Husbandry and Biotechnology University.

The scientific examination of cows infected with purulent-catarrhal endometritis of bacterial and mycotic etiology, clinical symptoms, as well as determining the types of fungi and their sensitivity to drugs was carried out in the farms specializing in animal husbandry in the districts of Samarkand region, as well as in the laboratories of the Samarkand State University of Veterinary Medicine, Animal Husbandry and Biotechnology.

The samples taken from the uterus of cows brought from the farms were planted in nutrient media, then a clean culture was taken from the grown fungal colonies and discs soaked with various drugs were placed on them, and the sensitivity of the fungi to drugs was determined depending on the size of the colony formed around the disc.

## 3 Results and Discussion

Purulent-catarrhal endometritis of bacterial and mycotic etiology was recorded after calving cows in all seasons of the year.

In 2018, more than 12 cows (26%) were infected with purulent-catarrhal endometritis of bacterial and mycotic etiology, 5 cows (41.6%) in the spring months, 4 cows (33.3%) in the summer months, less in 3 cows (25%) in the winter months and more than 15 cows (25.4%) infected with purulent-catarrhal endometritis of bacterial and mycotic etiology during 2019

in 6 cows (40%) in the spring months, 4 cows in the winter months ( 26.6%), it was recorded in 4 cows (26.6%) in summer months and less in 1 cow (6.6%) in autumn months (Appendix 3).

In animals infected with purulent-catarrhal endometritis of bacterial and mycotic etiology, clinical signs characteristic of purulent-catarrhal endometritis are also manifested at the beginning of the disease, fluid is released from the genitals of sick animals in large quantities when the animal urinates and defecates , and during defecation, a large amount of liquid was released, and it was noted that a large amount of liquid was in the area of the in the evening.

It was found that the general condition of the cows is bad, peristalsis is increased, the dung is liquid, the back is bent and the tail is raised. It was observed that the general condition of the sick animal worsened, it became weak, and as a result of the loss of appetite, the yield of milk decreased. Rectal massage of the uterus of a lying cow produces a large amount of foul-smelling, gray-brown or yellow-brown liquid exudate. A cow wants to urinate from time to time, bends its back and stands with its tail raised for a long time.

During rectal examination, it was found that at the beginning of the disease, the uterus was in the form of a swollen ball of various sizes, and gradually it shrunk and stretched towards the abdominal cavity. The wall of the uterus is thickened and loose, painful and pasty, and does not shrink even when massaged.

Changes in body temperature and pulse are the main and characteristic indicators of clinical signs in cows with acute purulent-catarrhal endometritis of bacterial-mycotic etiology. Body temperature increased by 1°C in 82% of animals, which is 50% more than in cows with endometritis of bacterial etiology, pulse rate increased by 11-13 minutes in 71% of animals, which is more than with acute purulent-catarrhal endometritis of bacterial-mycotic etiology with endometritis of bacterial etiology it was noted that it was 42% more than infected animals.

Also, white films were observed on the vaginal mucosa in cows with endometritis of bacterial-mycotic etiology, which were not observed at all in animals with endometritis of bacterial etiology.

It was found that in the middle level of endometritis of bacterial-mycotic etiology, the appetite of sick animals decreased, the body temperature of the animals increased by 1 C and the pulse rate increased by 11-13 minutes. When examined by vaginal and rectal methods, redness of the entrance and vaginal mucous membranes and white films were observed on the vaginal mucosa, the uterus and abdomen it was found that it is located in the cavity and that it is not shrinking at all. It was found that 80 ml of cloudy mixed mucous fluid of various white, yellow or green colors was released from the uterus until morning.

In severe cases of endometritis of bacterial-mycotic etiology, it was found that sick animals lost their appetite and decreased milk production, lethargy, the body temperature of animals increased by 1-1.5°C and the pulse rate increased by 15-20 minutes. When examined by vaginal and rectal methods, redness in the mucous membranes of the vagina and anus was found. and traces of white loose films were observed on the lower surface of the vaginal mucosa, it was determined that the uterus was located in the abdominal cavity and that it was not shrinking at all. It was found that 150 ml of cloudy uniform white, yellow or green mucoid fluid with an unpleasant smell was released from the uterus until morning.

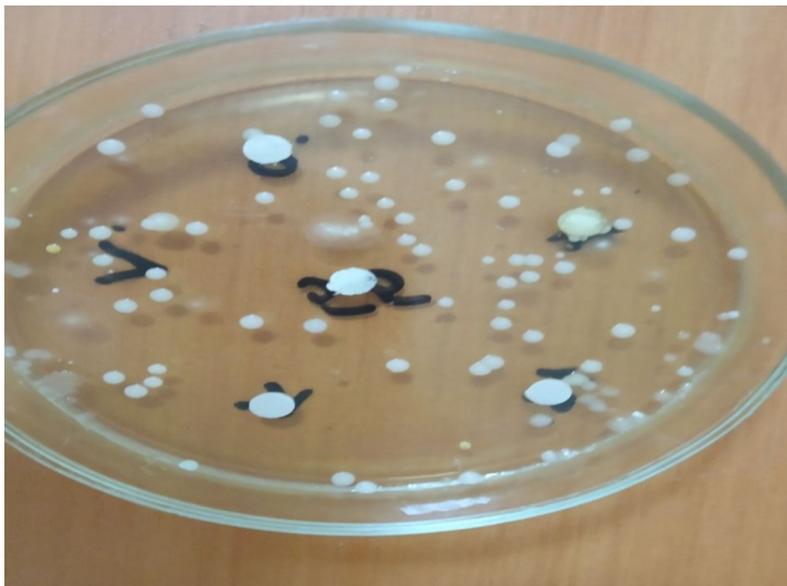
The results of the research show thatThe most important clinical signs of endometritis of bacterial-mycotic etiology are body temperature and heart rate, shortness of breath, which increase sharply with the increase of the inflammatory process in the uterus, and in comparison with animals suffering from endometritis of bacterial etiology, traces of white loose films were observed on the lower surface of the vaginal mucosa. , they were not observed at all in animals with endometritis of bacterial etiology.

Bacterial and mycotic etiology purulent-catarhal endometritis what types of fungi are present in cows infected with Saburo agar, Nutrient agar and Schadler agar were prepared for this purpose.

Samples taken from animals were sterilized using special sterile swabs, nutrient medium for *Candida albicans*, Saburo agar, nutrient medium for *Candida glabrata*, Nutrient agar, nutrient medium for *Candida krusei*, Schadler agar Algae grown on culture media were placed in a thermostat and examined after 24 h at 37 C. Colonies of *Candida albicans* were found to be white in size with large round granules attached to each other, *Candida glabrata* colonies were round granules in yellow color and *Candida krusei* colonies were very thick in yellow color.



**Fig. 1.** *Candida albicans*.



**Fig. 2.** *Candida glabrata*.



**Fig. 3.** *Candida krusei*.

Specimens from the vagina and cervix of cows are Petricalyces grown in nutrient media Fungi are special *Candida albicans* 41.8-45.2% when cultured in nutrient media, *Candida glabrata* 26.8-29.2% and *Candida krusei* was found to be 26.0-30.0% (Table 1).

*Candida albicans* 22 mm in emulsion when colonies were measured in thermostated Petri dishes. *Candida glabrata* 23mm and *Candida krusei* was 21mm, while *Candida albicans* was 26mm in fluconazole soaked disks, *Candida glabrata* 27mm and *Candida krusei* was 29mm. *Candida albicans* 23 mm on similar nystatin-soaked discs, *Candida glabrata* 22 mm and *Candida krusei* 21 mm, and *Candida albicans* 24 mm in ketoconazole soaked disks, *Candida glabrata* 22 mm and *Candida krusei* 25 mm (Table 2).

**Table 1.** Types and percentage of fungi in cows with purulent-catarrhal endometritis of bacterial and mycotic etiology.

No	Types of Zambrug	1	2	3	4	5
1	<i>Candida albicans</i>	43.2%	42.2%	44.4%	41.8%	45.2%
2	<i>Candida glabrata</i>	29.2%	27.4%	29.2%	28.8%	26.8%
3	<i>Candida krusei</i>	27.4%	30.0%	26.0%	29.2%	27.8%
4	Total	99.8	99.6	99.6	99.8	99.8

**Table 2.** Bacterial and mycoticetiological purulent-catarrhal endometritisin cows infected withsensitivity of fungi to drugs.

No	Fluconazole	Nystatin	Ketoconazole	emulsion
Types of fungi	mm	mm	mm	mm
<i>Candida albicans</i>	26 mm	23 mm	24mm	22 mm
<i>Candida glabrata</i>	27 mm	22 mm	22 mm	23 mm
<i>Candida krusei</i>	29 mm	21mm	25mm	21mm

## 4 Conclusion

The most important clinical signs of endometritis of bacterial-mycotic etiology are body temperature and heart rate, increased breathing rate, which increase sharply with the increase of the inflammatory process in the uterus, as well as traces of white loose films

were observed on the lower surface of the vaginal mucosa in comparison with animals suffering from endometritis of bacterial etiology, they were not observed at all in animals with endometritis of bacterial etiology.

The most important clinical signs of endometritis of bacterial-mycotic etiology are body temperature and heart rate, increased breathing rate, which increase sharply with the increase of the inflammatory process in the uterus, as well as traces of white loose films were observed on the lower surface of the vaginal mucosa in comparison with animals suffering from endometritis of bacterial etiology, they were not observed at all in animals with endometritis of bacterial etiology.

- Purulent-catarrhal endometritis of fungal etiology *Candida albicans* 41.8-45.2% when cultured in nutrient media taken from the uterus of cows infected with *Candida glabrata* 26.8-29.2% and *Candida krusei* 26.0-30.0% were noted.
- Fluconazole and ketoconazole In the soaked disks, the index of zones of *Candida albicans* was 26 mm, *Candida glabrata* 27 mm, and *Candida krusei* 29 mm, while the lowest index was found to be *Candida albicans* 23 mm, *Candida glabrata* 22 mm, and *Candida krusei* 21 mm in the disks soaked with nystatin and emulsion.

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