

YEAST MASTITIS IN COWS

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SUMMARY

Yeast mastitis in cows is very rare, but sometimes it can emerge in epizootic proportions. Usually, yeast mastitis occurs in 2-3% of all cases of mastitis in dairy cows. Most common isolated fungi in cases of mycotic mastitis are the yeasts from genera *Candida* and genera *Cryptococcus*, precisely two species *Candida albicans* and *Cryptococcus neoformans*. Yeast mastitis can emerge like clinic, sub clinic, chronic and sometimes acute mastitis. The ways of transmission is almost always connected with administration of medicaments in udder or with surgical or other procedure on tits. The other ways also could be included. There are no differences between clinical manifestation of bacterial mastitis and yeast mastitis. Only by microbiological examination one can obtain exact diagnosis of yeast mastitis. Therapy of yeast mastitis is indicated, but sometimes spontaneous-recovery is possible. Therapy of yeast mastitis includes use of antimycotic drugs during long period of time, but precaution is necessary because possibility of repeated infection and infection with other pathogenic agents exists. Recovery period is long and may last weeks and months.

INTRODUCTION

The commonest causes of yeast mastitis isolated from the udder of cows are the yeasts from the genera *Candida* and *Cryptococcus* (1,2). *Candida* is a commensal of mucocutaneous areas, particularly of the intestinal and genital tracts. *Cryptococcus* is present in dust, skin, mucous membranes, intestinal tract of normal animals. Those yeasts, usually are not threat for animal health. In some circumstances yeasts can penetrate the udder and caused mastitis. It has usually been related to treatment directed toward another pathogen using contaminated syringes and canulas or contaminated antibiotic preparations (1,3,4,5). Teat injuries may predispose to the establishment of a yeast infection (31). Yeast intramammary infections were reported to be responsible for 2-3% of all clinical cases seen in a veterinary practice (7). Although the majority of the cases are mild, some intramammary infections may result in death of the affected animals (39). Prevalence of those mastitis is small, but sometimes they can emerge in epizootic proportions with fatal outcome: death or mycotic abortion in cows(5,6).

Materials and methods

Isolation of the cause. The samples are taken aseptically. Secrete from the ill quarter of the udder is inoculated on to the blood-agar and Sabouraud dextrose agar plate. Inoculated

plates had been incubated aerobically at 37°C. In the same time milk smears were made and stained by technique for somatic cells. The colonies had been examined both macroscopically and microscopically by examining Gram stained smears. Yeast colonies grown on blood agar at 37°C for 24-48 hours may be confused and misidentified as staphylococci or micrococci. The colonies of *Candida* sp generally are opaque, white or yellowish. Their texture is creamy, and in a microscopic smear appear to consist solely of oval to round budding blastospores Identification of microorganisms was carried out according to macromorphology, micromorphology, biochemical characteristics and by demonstration of germ tubes in rabbit plasma(10).

Therapy. Ill animal was treated with Nistatin lard in doses of 10g per quarter. The lard was injected into tits after thorough milking and disinfections of papilla with povidon iodine solution. The application was repeated every 24 hours during 15 days. Resorbic lards were rubbed local. The cow was milked three times a day. Control examinations were carried out after 3 and 8 weeks.

Results

During clinical examination of the sick cow, we noticed signs of severe inflammation of the udder: painful and firm swelling of the last right quarter, without enlargement of the

Table 1. Biochemical characteristic of *Candida albicans* isolated from infected udder

	Glucose fermentation	Lactose fermentation	Maltose fermentation	Sucrose fermentation	Trehalose fermentation	Urease at 25°C	Germ tubes up 3h	Growth at 45°C
<i>Candida albicans</i>	+	-	+	-	+	-	+	+
Gideon database	+	-	+	-	+	-	+	+

Inn. supramammarici, skin of the udder was very tighten. Secretion from the ill quarter was reduced to 0.3 l in every milking, the secret was very changed. During the examination, we noticed that general condition was slightly changed: there was no fever, depression was present, feeble consumption of food. California mastitis test showed very positive reaction, which pointed out the tissue was strongly affected and the cellular answer was strong.

Customary incubation time for the yeast *Candida albicans* is 24-48 hours, but we acquired growth after 24 hours of aerobic incubation on 37°C. The colonies were round, muddled, creamy, white-colored, with sour beer smell. The growth was obtained in pure culture both on the blood agar and Sabouraud. On the microscopic smears Gram stained we noticed Gram positive oval-shaped microorganisms which were much larger than bacteria. On some cells we could catch sights of buds. Biochemical characteristic of the isolated yeast were also determined, particularly abilities to fermenting the sugars: glucose, lactose, maltose, sucrose, trehalose, xylose, urease (table 1). Microscopic smears made from milk showed presence of enlarged number of somatic cells and the domination of the granulocytes.

On the control check up after three weeks, we again isolated the same pathogenic agent. After eight weeks the check was clear.

After seven days of Nistatin treatment, the inflammation greatly reduced, but the swell persisted for two more weeks. The complete reclamation of the udder and normal milk production were obtained after six weeks.

Discussion

Yeast mastitis produce almost same clinic manifestation as other mastitis do, so it is difficult to set a diagnosis according to those information. The stable tests, like California mastitis test, are not enough for making diagnosis because they are based on indirect proving of the inflammation. If we do not use microbiology, the yeast mastitis is suspected when antibiotic therapy fails.

Usual laboratory isolation techniques are reliable, sensitive and secure enough for diagnosis of those mastitis. They are easy to perform and do not request expensive, complicated equipment.

When we are talking about the therapy of those mastitis, there is a difference of the opinions. Some think that yeast mastitis

ends with spontaneous recovery without therapy (8) and others that the treatment is necessary. We can use different antimycotics in therapy: Nistatin, Clotrimazol, Polimixin, miconazol (100g/l), Amphotericin B, Fluorocytosin (9). Mastitis caused with *Cryptococcus neoformans* can't be spontaneously healed, so the therapy is necessary. There are no precise dates about the efficiency of this therapy (7,8).

Conclusion

Yeast mastitis caused with *Candida albicans* occurs rarely and they are seldom connected with surgical operations or other grasps on the udder, so they can be comprehended as professional mistake of the therapist. Taking into consideration that those are environmental microorganisms and constantly present on the skin, one should be careful while treating udder. One should work aseptic, and antibiotics used in the udder treatment should be kept properly.

Every mastitis case should be subjected to microbiological diagnosis. If it's not the case, and antibiotics therapy fails, one can suspect on the yeast mastitis.

Candida albicans produces toxins and can colonize mouth and intestines, infected animals can be danger for men who consume milk.

When we discuss the therapy, opinions are divided. We are not in the possibility to gain any conclusions because we processed only one case, so we didn't have nothing to compare to. Long lasting of the recovery is not encouraging.

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