AN OUTBREAK OF BOVINE MYCOTIC MASTITIS ASSOCIATED WITH DRY STORAGE OF TEAT CUP INFLATIONS

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(Received for publication July 5, 1955)

Cryptococcus neoformans and Candida sp. have been isolated from cases of bovine mastitis (1, 2, 3). These organisms were indistinguishable from pathogenic human strains. Therefore, bovine mycotic mastitis constitutes a potential public health hazard. The increased frequency of observation of mycotic mastitis is perhaps the result of the antibiotic age and a greater awareness of mycotic disease. This report describes an outbreak of bovine mycotic mastitis and the probable role of dry storage of teat cup inflations in its spread.

HISTORY

The herd consisted of 31 milking animals maintained under good conditions of husbandry and sanitation. Milk samples from four heifers were submitted by the local veterinarian to the Animal Disease Diagnostic Laboratory on January 20, 1954 and yeasts were isolated from each of the four samples. A request was received by the Animal Disease Diagnostic Laboratory on January 28, 1954 to investigate the problem which had persisted in the herd for at least 10 days. The general symptoms consisted of partial agalactia, pyrexia, extensive swelling of the infected mammary gland, anorexia, and listlessness. Some animals shivered unless blanketed. The highest body temperature recorded was 107°F. A few of the infected quarters secreted milk that was stringy, clotted or discolored. Abortion, icterus, or bloody urine were not observed in any of the infected animals.

The treatment schedule which had been instituted by the attending veterinarian for each of the affected animals, in general, consisted of the following: streptomycin, 5 to 10 grams daily for five days, intramuscularly; aqueous penicillin, 3 to 6 million units daily for five days, intramuscularly; sulfamethazine intravenously; Soxsipent®R intramammary infusions; and bacitracin 25,000 units daily, intrammary infusion. Each animal in the herd also was injected with 5 ml. of staphylococcus toxoid.

EXAMINATIONS AND OBSERVATIONS

Quarter milk samples were taken from 7 cows on January 28, 1954 and yeasts were isolated from samples from 3 of the animals. The report of the laboratory findings was submitted to the attending veterinarian for each of the affected animals, in general, consisted of the following: streptomycin, 5 to 10 grams daily for five days, intramuscularly; aqueous penicillin, 3 to 6 million units daily for five days, intramuscularly; sulfamethazine intravenously; Soxsipent®R intramammary infusions; and bacitracin 25,000 units daily, intrammary infusion. Each animal in the herd also was injected with 5 ml. of staphylococcus toxoid.

1 Published with the approval of the director of the Wisconsin Agricultural Experiment Station as paper NS 186 from the Department of Veterinary Science, University of Wisconsin, Madison.

2 From the State Department of Agriculture Animal Disease Diagnostic Laboratory, 2115 Linden Drive, Madison 6, Wisconsin.

Soxsipent®R—antibiotic ointment (Fort Dodge Laboratories).
Capralan®R—fungicide (Strasenburgh).

3 Phenol crystals 20.0 gm; Lactic acid 20.0 gm; Glycerin 40.0 gm; Distilled water 20.0 gm. Dissolve ingredients by heating gently under a stream of running hot water. Add 0.05 gm. of cotton blue (Poiriers Blue).
with the recommendation that all antibiotic therapy be discontinued and that some antimycotic agent be administered. Each of the infected quarters was injected with 30 ml. of Capralan®.

Milk from each quarter of the entire herd was taken on February 18, 1954 and in 10 cows a total of 18 quarters were shedding yeasts. Two of the animals which were shedding yeasts on the first sampling were not shedding yeasts at this time.

Development of clinical evidence of the disease followed the milking order and suggested mechanical transmission. The dairyman was questioned about milking procedure and equipment care. He revealed that the local milk sanitarian had recommended dry storage of teat cup inflations. Teat cup washings were taken at random from two of the four teat cups in each respective cluster of the three milking machine units. The washing medium was sterile one per cent peptone broth. The washings were pooled and 0.1 ml. aliquots were cultured on Sabouraud’s dextrose agar. After incubation at 37° C. for 48 hours, the surface of the agar plate was completely covered with a confluent growth which was grossly indistinguishable from that obtained from the infected mammary glands. Microscopic examination of suspensions of the growth in lactophenol cotton blue mounting medium revealed yeast-like organisms. The carbohydrate fermentation reactions, the cultural growth on Sabouraud’s agar and corn meal agar suggested that these isolates belonged to various species of the genus Candida.

The importance of a laboratory determination of the etiologic agent prior to future therapy was further emphasized to the dairymen and local veterinarian. In addition, it was recommended that teat cup inflations be stored in 0.5 per cent lye solution instead of being stored dry. The presumption that the average dairyman can and will adequately cleanse his equipment is not well-founded. Furthermore, sound precept and instruction by inspection, extension, and veterinary agencies should be undertaken. Mycotic mastitis and excessively high bacterial counts have been observed by the authors on other farms where dry storage has been practiced. These outbreaks have been overcome following institution of the lye method of storage.

Since this herd was located nearly 150 miles from the laboratory, repeated laboratory testing was impracticable.

The findings in this outbreak suggest that the promiscuous use of antibiotic agents in the absence of an etiologic diagnosis may be useless or even detrimental; it is probable that the administration of antibiotics accentuated this bizarre mastitis outbreak. Such a presumption is based on the observation that the prevalence and severity of the disease abated with the cessation of antibiotic therapy.

Everyone is aware of the insurance value of pasteurization and, analogously, that of a lye, or other type disinfectant solution, or heat treatment for teat cup sanitization. It is believed that the practicability of dry storage of teat cups should be carefully scrutinized under experimental field conditions.

Limited field experience in Wisconsin has revealed definite shortcomings in this method of storage.

References


3. Stuart, F. An Outbreak of Bovine Mastitis from which Yeasts were Isolated, and Attempts to Reproduce the Conditions Experimentally. Vet. Record, 63: 314. 1951.

THE EFFECT OF FREEZING ON THE STANDARD PLATE COUNT OF MILK

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Acknowledgments

We wish to thank the Ontario Department of Health Laboratory, and the local pasteurizing plant, for their cooperation in making samples available for these studies.

Addendum

Since this paper was prepared, an abstract has appeared in Dairy Science Abstracts 17 (9), 738 of a paper by E. G. Sarouelsson in Svenska Mejeritidn. 47 (5) 59-62, 1955. This abstract states that “the bacteriological state of the milk is practically unaltered by deep-freezing.”

References

