

THE EFFECT OF DIFFERENT MANAGEMENT SYSTEMS ON THE OCCURRENCE OF DIARRHEA IN CALVES

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ABSTRACT

This survey was achieved on 2800 Holliston calves in Tabriz area in Iran. The study examined the effect of calf source, serum immunoglobulin levels, body weight, disinfecting of the navel and the injection of vitamin A in the first day of the life on the occurrence of diarrhea and death in two systems of calf management. Occurrence of diarrhea was significantly influenced by calf source ($P<0.01$), serum immunoglobulin level ($P<0.01$), body weight ($P<0.05$), disinfecting of the navel ($P<0.01$) and the injection of vitamin A in the first day of the life ($P<0.05$) under both management systems. Deaths were significantly influenced by serum immunoglobulin levels and body weight under both systems. Calf body weight among calves which had diarrhea was lower. The occurrence of diarrhea and death was lower among calves group fed acidified milk replacer than calves fed normal milk replacer under similar circumstances.

Keywords: management, diarrhea, calf

INTRODUCTION

Diarrhea remains an important cause of illness and death of young calves. The economic effects of calf scours can be profound. Some cattle herds annually experience death rates of 5 to 10 percent or greater, sometimes with up to 100 percent of calves being ill (1,10). Economic costs of the disease include loss of performance, mortality, and the expense of medication and labor to treat sick calves. In addition, herd owners and their employees often become disheartened after investing long hours to treat scouring calves during an already exhausting calving season(6).

The diarrhea and other clinical signs seen with the disease are caused by the interaction of any of several possible infectious causes and predisposing factors such as lack of colostrum, failure to absorb colostral antibody, poor nutrition and environmental affects.

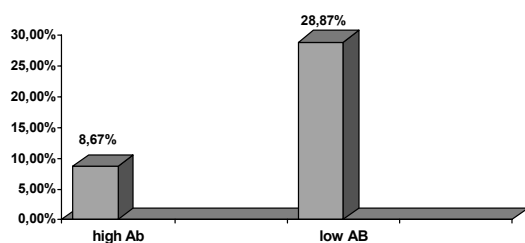
Management systems can have a profound effect on the health of cattle (2, 10, and 11). Our objective was to study the effect of different management systems on the occurrence of diarrhea in calves in Tabriz area in Iran. An effective contact is an exposure to pathogens of a dose-load or duration sufficient to cause disease. Effective contacts can be prevented by physical separating animals, reducing the level of exposure (e.g. through the use of sanitation or dilution over space), or minimizing contact time. These actions have been successfully applied in calf hutch systems to control neonatal diseases in dairy calves (9).

MATERIALS AND METHODS

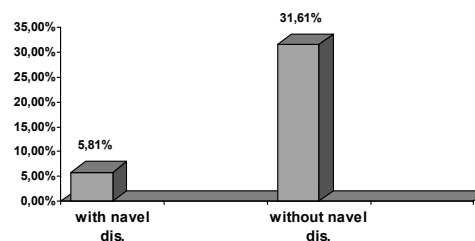
Ten dairy herds in Tabriz area in Iran were monitored for 2 years to determine the effects of environment and management on mortality in preweaned calves. In this time 2800 Holliston calves were studied. 750 calves were with diarrhea. Environmental factors were evaluated by veterinarians during monthly visits to the herds. Management procedures were measured through the use of a questionnaire administered near the end of the project. Mortality in preweaned calves was calculated for each herd by using data from project records on calf mortality and animal inventory, which were collected monthly by veterinarians. Relationships between the management/environment variables and calf mortality were examined by use of analysis of covariance. Herd size, days on a nipple feeder, navel disinfection, type of housing, and whether each calf observed with diarrhea was treated with antibiotics were the variables that had an impact on herd mortality. These variables explained approximately 39% of the variation in mortality among herds.

RESULT

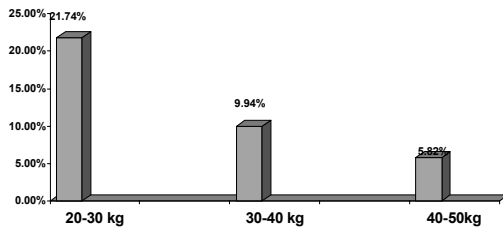
In this survey 2800 calves in ten dairy herds were studied that 750 calves (37.5%) were with diarrhea. The diarrhea was higher in the calves that had high levels of immunoglobulin in serum than calves with low level it (8.67% and 28.83%, respectively). Total calves divided in 3 groups on the bases of the body weight (20–30 kg, 30–40 kg and 40–50 kg). In these groups the incidence of diarrhea was 21.74%, 9.94% and 5.82% respectively). The calves that were brought from mothers with best body condition had low diarrhea. Disinfection of the navel cause decreasing of the incidence of diarrhea. In the calves that the navel was disinfected early after the birth had low diarrhea from these were not disinfected (5.89% and 31.61% respectively). In the calves that had been used vitamin A (injection) in the firth day, incidence of diarrhea was 14.43% and in these that had not been used it was 23.07%. In the calves that had been used acidified milk replacer the incidence of diarrhea was lower than calves with normal milk replacer (15.21% and 22.29% respectively).



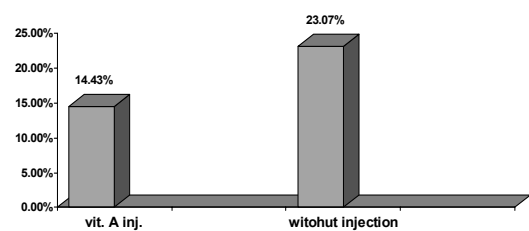
Graf 1. The present of the incidence of diarrhea in calves with high and low levels of immunoglobulin in the serum



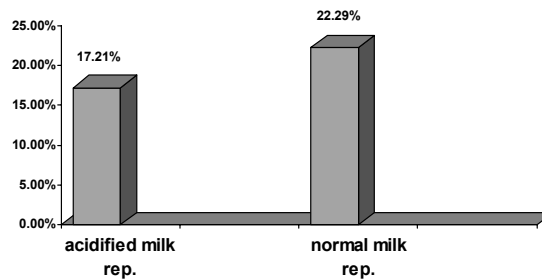
Graf 2. The present of the incidence of diarrhea in calves with disinfection of the navel and without it



Graf 3. The present of the incidence of diarrhea in calves on the bases of the body weight in the birth time



Graf 4. The present of the incidence of diarrhea in calves with injection of vitamin A and without it in the early life



Graf 5. The present of the incidence of diarrhea in calves on the bases of the use of acidified milk replacer and normal milk replacer

DISCUSSION

Neonatal calf scours is a multifactorial disease. Agent, host, and environmental factors play important roles in the occurrence of disease and knowledge of these factors become the basis for management intervention to control the disease. Numerous infectious agents have been recovered from scouring calves (5,8). Common agents of neonatal calf scours include bacteria such as *Escherichia coli* and *Salmonella*, viruses such as rotavirus and coronavirus, and protozoa such as cryptosporidia (6,11). Bovine rotavirus, bovine coronavirus and cryptosporidia are ubiquitous to most cattle populations and can be recovered from calves in herds not experiencing calf diarrhea. Further, multiple agents can be recovered from herds experiencing outbreaks of calf diarrhea suggesting that even during outbreaks more than one agent may be involved. Finally, it is important to recognize that the cow herd serves as the reservoir of pathogens from one year to the next (10).

Occurrence of diarrhea was significantly influenced by calf source ($P < 0.01$), serum immunoglobulin level ($P < 0.01$), body weight ($P < 0.05$), disinfecting of the navel ($P < 0.01$) and the injection of vitamin A in the first day of the life ($P < 0.05$) under both management systems. Deaths were significantly influenced by serum immunoglobulin levels and body weight under both systems. Calf body weight among calves which had diarrhea was lower. The occurrence of diarrhea and death was lower among calves group fed acidified milk replacer than calves fed normal milk replacer under similar circumstances.

Because the physiology of the bovine placenta prevents transfer of maternal serum immunoglobulins to the calf before it is born, the neonatal calf is entirely dependent on colostrum immunoglobulins for protection from disease. Calves acquire passive immunity against the common agents of calf scours after absorbing antibodies from colostrum or colostrum supplements. The quality and quantity of colostrum ingested largely influences the level of passive protection. The presence of the antibodies in colostrum directed against specific agents requires prior exposure of the dam to the agent(2,4,and 7).

In heavily used calving grounds, the navel of newborn calves should be treated with iodine. Disinfection is very important in controlling the accumulation and spread of disease-causing microorganisms. Review procedure and have a fluid therapy program prepared for scouring calves, as dehydration and secondary disease problems are the big calf killers(6).

Many calves will also benefit from a vitamin A injection. Vitamin A deficiency disassociated with scours. The calf should be given 500,000I.U vitamin A early in life(10).

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