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EPIDEMIOLOGY AND ECONOMIC IMPACT OF BVD/MD IN SWITZERLAND

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Le virus de la maladie des muqueuses (BVD/MD) est un pathogène bovin qui cause des dommages considérables. Depuis 1995, une étude épidémiologique de cette maladie est menée à l'Institut de Virologie de la Faculté Vétérinaire de Berne afin d'en estimer l'impact économique dans le cheptel bovin suisse, et d'envisager la mise en place d'un programme de lutte. Une étude transversale, réalisée dans 121 troupeaux incluant 3440 animaux, a montré un taux de séroconversion de 56% (± 4,4%) et un taux d'infection persistante de 0,5% (± 0,25%). L'alpage estival et la mise précoce des veaux en unité d'engraissement se sont avérés être des facteurs de risque importants pour l'apparition des infections persistantes. Les pertes causées par la mort ou l'élimination précoce des animaux infectés de manière persistante dans les troupeaux d'élevage, ou par la diminution de gain de poids, ainsi que l'impact sur la fertilité des troupeaux sont en cours d'estimation.

INTRODUCTION

BVD/MD (Bovine Virus Diarrhoea / Mucosal Disease) virus is known to cause a wide variety of health problems in cattle. Depending on the stage of gestation, infection with this pestivirus may result in a decreased repro-ductive performance (fetal resorption, abortions, birth of persistently infected calves) and is involved in the pneumo-enteritic syndrome in veal calves. Persistently infected animals (PI), which are the major source of infection, usually die within three years of life due to "Mucosal Disease". Postnatal infection leads to antibody production and lifelong immunity. The virus is transmitted both by acutely and PI animals [Brownlie, 1991]. Considerable damage caused by BVD/MD has been reported in numerous case studies [Bitsch et al, 1995]. In Switzerland, information on the economic impact of BVD/MD is scarce and rather vague. We have therefore initiated a pilot project to determine the economic impact of BVD/MD in Switzerland and to evaluate the feasibility and cost efficiency of a possible eradication campaign.

RESULTS & DISCUSSION

In 1995 a cross-sectional study on 121 randomly selected farms with a total of 3440 animals was undertaken. All animals were screened using antigen-capture and antibody-ELISAs. In 13 herds, a total of 17 PI animals (0.5 +/- 0.25%) were detected and 56% (+/- 4.4%) of all animals tested were found to be antibody-positive to BVD virus. The seroprevalence varied considerably between different herds, with the highest prevalence in herds containing at least one PI animal. Heifers showed a lower prevalence of BVDV antibodies than cows (48% vs 79%). Retesting of antibody negative animals one year later revealed average incidence rates of 21% for seroconversion and 1.43% for the generation of PI animals.

Although the antibody prevalence was comparable to that in other countries, the antigen prevalence was surprisingly low, especially when we take into account 'risky' management practices such as common grazing of heifers in early gestation on alpine meadows. The importance of alping as a risk factor was supported by data obtained in an alping association with 600 animals originating from 20 farms. In this cohort the prevalence of PI animals was 1.5% and the relative risk of seroconversion due to alping was 1.81 (CI: 1.13 - 2.88).

Additional investigations showed that the low prevalence of PI animals in dairy farms may be the net result of two antagonistic processes: On the one hand, more PI animals may be generated due to alping. On the other hand, the majority of these PI animals are removed to isolated veal calf rearing units.

To determine the economic impact of BVD/MD a first approach took into account 1) losses due to early death or premature removal of PI animals in dairy farms, 2) losses due to decreased fertility and 3) decreased weight gain of veal calves. The losses due to death or early removal of PI animals depend largely on their age and on whether the meat of these animals is suitable for human consumption. Interpretation of the data obtained in this part of our study is difficult because of current rapid and unpredictable changes in the meat market due to BSE. Additional studies provided information on financial losses caused by BVD/MD in veal calf rearing and bull fattening units. Determination of the influence on fertility may be the most complex part of our comprehensive study of the overall economic impact of BVD/MD virus infection in cattle. Preliminary data indicate, however, that the losses in this segment might turn out to be considerable. Therefore, the precise determination of these losses may be crucial in deciding whether an eradication of BVD/MD in Switzerland would be cost-effective.

REFERENCES

Bitsch V., Ronsholt L., 1995. Control of bovine viral diarrhea virus infection without vaccines. Veterinary clinics of North America: Food animal practice 11(3), 627-640.

Brownlie J., 1991. The pathways for bovine virus diarrhoea virus biotypes in the pathogenesis of disease. Arch.Virol. Suppl.3, 79-96.

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