Epidémiol. santé anim., 1997, 31-32

A STUDY OF THE SEROPREVALENCE OF BOVINE HERPESVIRUS 1 INFECTION IN THE WALLOON REGION OF BELGIUM

Lemaire M.[1], de Wergifosse B.[1], Nols L.[1], Limbourg B.[1], Deblicquy P.[3], Onclin M.[4], Czaplicky G.[4], Bughin J.[5], Antoine H.[6], Wellemans G.[7], Pastoret P.-P.[1], Thiry E.[1]

Afin de mieux connaître la situation épidémiologique de l'infection par l'herpèsvirus bovin de type 1 (BHV-1) en Région Wallonne de Belgique, une enquête séro-épidémiologique a été réalisée au cours de l'hiver 1994-1995 à partir d'un échantillon aléatoire en grappes. Au total, 3223 échantillons sanguins issus de 42 exploitations sur 56 sélectionnées ont été analysés par ELISA. 63,7% des animaux étaient séropositifs envers le BHV-1. La séroprévalence par troupeau variait de 7,5% à 100% et était en moyenne de 50,9%. Au cours de l'hiver suivant, 24 exploitations ont pu être analysées à nouveau. Le taux d'incidence de séroconversion au sein de ces troupeaux a pu être déterminé. La séroprévalence moyenne de ces exploitations a évolué de 57,7% à 67,5%. La prévalence élevée d'animaux séropositifs peut être expliquée par l'usage courant de la vaccination, par des élevages principalement de type ouvert et par la circulation du BHV-1 sur le terrain.

INTRODUCTION

Bovine herpesvirus 1 (BHV-1), the causative agent of infectious bovine rhinotracheitis (IBR), is an important pathogen for cattle. BHV-1 persists in a latent state. Latently infected animals can be detected by the presence of anti-BHV-1 antibodies. IBR eradication programmes have been initiated in several European countries. In Belgium, the seroprevalence of BHV-1 infection is rather high (Lemaire et al., 1994). A systematic sample of 400 sera carried out in the winter of 1992-1993 in the Walloon Region indicated a seroprevalence of 56.6%. The aim of this study was to investigate the epidemiological situation in the Walloon Region.

MATERIALS AND METHODS

A cluster random sample, stratified in each of the 4 provinces of the Walloon Region, was randomly constituted. Sera were collected, in 42 out of 56 selected herds, on all animals (older than 8 months) in Dec. 1994 and Jan. 1995 and were tested by ELISA for the detection of BHV-1 antibodies (SERELISA IBR/IPV Ab Indirect, Rhône Mérieux). Herd type, replacement policy, previous vaccination schemes against BHV-1 infection, previous clinical outbreaks were recorded. One year later, 24 out of the 42 herds were retested. The incidence rate of seroconversion was calculated (Rumeau-Rouquette et al., 1993).

RESULTS

In total, 3223 animals were tested in the winter of 1994-1995. 63.7% of them were seropositive to BHV-1 (table I). Herd seroprevalence ranged between 7.5% to 100%, with a mean of 50.9% (figure 1).

Provinces	N	n	-	d	+	%
Namur, Brabant	7	446	234	13	199	47.8
Hainaut	15	1416	332	29	1055	76.6
Liège	9	536	223	14	299	58.4
Luxembourg	11	825	382	47	396	53.7
Total	42	3223	1171	103	1949	63.7

Table I : Results of ELISA test. N= number of farms; n= number of animals tested; -: seronegative; d: doubtful; +: seropositive

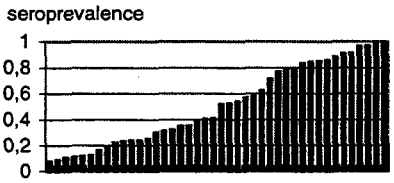

Figure 1 : Distribution of herd seroprevalence for the 42 farms tested in this cluster sample study.

One year later, 24 herds were retested. Mean seroprevalence in these herds increased from 57.7% to 67.5%. In two herds, no seronegative animals could be followed up. In the other herds, 308 out 588 seronegative animals were still present and retested, and 159 out them had seroconverted. The incidence rate was 43 seroconversions per 100 animal-years at risk. One or more seroconversions were observed in almost all herds.

CONCLUSION

A high seroprevalence, 63.7% of seropositive animals, was observed. Seropositive animals can be considered as latently infected because only live attenuated vaccines were in use during this study. A high incidence rate of seroconversion was also observed, indicating virus circulation in almost all farms (vaccination is generaly applied only in young animals). The high prevalence of BHV-1 seropositive animals can be explained by vaccination, frequent purchases, field circulation of virulent and hypovirulent BHV-1 strains.

ACKNOLEDGMENTS

The autors extend special thanks to Dr D. Crevat (Rhône Mérieux) for providing the ELISA tests, and to M. Lahaye and J.-P. Georgin for their technical assistance. This investigation was supported by the Ministry of Walloon Region, and with the help of the Institut pour l'encouragement de la Recherche Scientifique dans l'Industrie et l'Agriculture (IRSIA).

REFERENCES

Lemaire M., Pastoret P.-P., Thiry E., 1994. Le contrôle de la rhinotrachéite infectieuse bovine. Annales de Médecine Vétérinaire, 138, 167-180.

Rumeau-Rouquette C., Blondel B., Kaminski M., Bréart G, 1993. Mesures de la mortalité et de la morbidité. In: Epidémiologie, méthodes et pratique. Médecine-Sciences, Flammarion (Paris), 27-46.

[1] Virology and Immunol. Departments, Faculty of Veterinary Medicine, University of Liège, B 43 bis, B-4000 Liège, Belgium
Centres de Dépistage des Maladies Animales [2] B-5100 Erpent ; [3] B-7000 Mons ; [4] B-4331 Loncin ; [5] B-6900 Marloie
[6] Centre d'Economie Rurale, B-6900 Marloie
[7] National Institute for Veterinary Research, B-1180 Bruxelles, Belgium