Prevalence of enzootic bovine leukosis in South-eastern Bulgaria during the period 1998-2000

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ABSTRACT

During the period 1998-2000, 200518 individual bovine blood sera were tested using the immunodiffusion test for detection of antibodies against the bovine leukosis virus in South-eastern Bulgaria. The results showed that this infection was widespread – 17.02% on average (from 2.78% in the region of Haskovo to 33.07% in the region of Burgas). Those data are evidence that enzootic bovine leukosis is an important epidemiological problem in the light of new conditions for the development of cattle breeding. The incidence of enzootic bovine leukosis must be limited and eventually eradicated through strict execution of the national EBL eradication programme.

Key words: enzootic bovine leukosis, prevalence, South-eastern Bulgaria

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Introduction

South-eastern Bulgaria is a region where animal husbandry is extensive. At the beginning of the 1980s, large cattle breeding farms were created through the import of highly productive animals from abroad. However, some viral infections, such as enzootic leukosis, were also imported. Gradually, a significant part of the local bovine breeds became infected. The results of serological studies for the period 1989-1990 showed the following prevalence of enzootic bovine leukosis (EBL): region of Haskovo: 7.56%; region of Sliven: 7.81%; region of Burgas: 13.28%; region of Stara Zagora: 16.65%. Despite the introduction of the Instruction for Prophylaxis and Control of Enzootic Bovine Leukosis, its partial observance resulted in successful restriction of the disease only in separate farms in the regions of Burgas, Sofia (GENOV, 1986) and Stara Zagora (SANDEV, 1988). After 1992, the structural changes in animal husbandry, determined by the change in the form of property, also influenced South-eastern Bulgaria, resulting in a significant decrease in the number of cattle and their congregation in the private sector.

The aim of the present study was to monitor comparatively EBL prevalence in all regions of South-eastern Bulgaria within the framework of the new cattle breeding structure.

Materials and methods

Data from serological studies of 200518 individual bovine blood sera, obtained from private and co-operative farms in the regions of Stara Zagora, Haskovo, Kardjali, Burgas, Yambol and Sliven, as well as from state cattle breeding farms in the region of Stara Zagora, analyzed by the immunodiffusion test, were used. The analyses were performed in the virological laboratories of the Regional Institute of Veterinary Research - Stara Zagora, the Regional Veterinary Centres in Burgas, Haskovo, Yambol, the Regional Veterinary Service in Sliven and the virological laboratory of the Department of Veterinary Microbiology, Infectious and Parasitic Diseases, Faculty of Veterinary Medicine, Trakia University. Immuno-diffusion was performed according to the method of Ouchterlony, modification of MILLER and VAN DER MAATEN (1976). A lyophilized group-

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specific antigen (gp 51) of the BEL virus (Sanofi, France) was used as antigen. An immune serum (Sanofi) was used as control.

Results

Table 1 shows the results from the 3-year period of study. They are indicative of the wide prevalence of EBL - 17.2% on average, ranging from 2.78% in the region of Haskovo (cumulative data for the regions of Haskovo and Kardjali) to 33.07% in the region of Burgas. In all regions, with the exception of Haskovo, seropositive cattle were about or above 20%. The highest percentage of incidence was observed in the private farms of the region of Burgas (34.22%) with a tendency towards a slight decrease to 31.78% in 2000.

Table 1. Prevalence of enzootic bovine leukosis in South-eastern Bulgaria for the period 1998-2000

Region	Number of tested samples	Positive samples	Percentage (%) of positive samples
Stara Zagora	29217	7987	27,34
Haskovo	77060	2143	2,78
Burgas	30904	10221	33,07
Yambol	28239	5968	21,13
Sliven	35098	7800	22,45
Total	200518	34119	17,02

The percentage of positive animals in the co-operative farms in the region of Sliven continuously increased: from 19.61% in 1998, to 34.53% in 2000. A similar epizootic situation was observed in the state farms in the region of Stara Zagora, where the positive seroreagents in 1998 were 22.19% and in 2000 were 29.59%. A tendency towards a decrease in the percentage of affected animals was observed only in the region of Yambol (from 24.45% in 1998 to 17.63% in 2000).
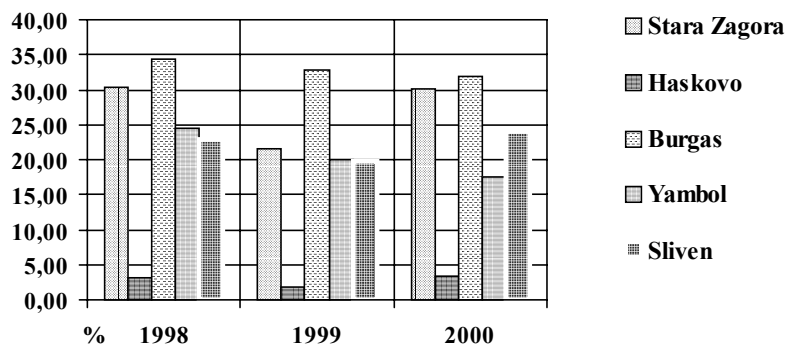
Fig. 1. Prevalence of enzootic bovine leukosis in different regions in South-eastern
Bulgaria.

Results for individual years in the period (Fig. 1) show that the prevalence of EBL was lowest in the region of Haskovo (from 1.76% to 3.38%) and highest in the region of Burgas (34.32% - 31.87%). These were followed by the regions of Stara Zagora (30.26% - 30.03%), Sliven (22.97% - 24.05%) and Yambol (24.45% - 17.63%).

Discussion

Data from the serological study evidenced that EBL is an actual epidemiological problem for the cattle breeding industry in South-eastern Bulgaria in the light of the new conditions of development in this branch. In our opinion, this is due to a significant level of negligence during the performance of Acts from the national programme for EBL prophylaxis and control, approved in 1993.

The principal cause for the broad spread of the infection was that private owners received cattle, positive for enzootic leukosis, from the closed state farms. In the background of the negative epidemic situation, the only exceptions were the regions of Haskovo and Kardjali, where average data showed a very low prevalence of the infection. This is due, on the one hand, to the geographical location (a mountainous region) and to the

technology of animal breeding (predominantly pasture breeding), and on the other to the genetic resistance of the local breed. The results of the serological study confirm the data reported by TSONEV et al. (1987) and SANDEV (1988) concerning the influence of those factors on EBL prevalence.

The restriction and the eradication of EBL require the strict execution of the national programme for control of the disease, conforming to the latest world scientific achievements in this area. The principal steps in the programme are reduced to the use of contemporary diagnostic means, control of the movement of animals in and out of herds, changes in the normative acts for compensation in case of death or the slaughtering of animals with EBL.

The successful control of EBL is highly dependent on rapid and precise diagnostics. Apart the immunodiffusion test, the introduction of more sensitive methods as ELISA, immunoblot, etc. is necessary. On the basis of our experience (SANDEV, 1995; TODOROV et al., 1995; SANDEV et al., 1998a; TSUTSUMANSKI, 1999) and the experience of others (FLORENT, 1988; FORSCHNER et al., 1989; KLINTEVAL et al., 1991; PELZER and SPRECHER, 1993) it must be emphasized that the unification of those methods and the standardization of used diagnosticums is obligatory.

Conclusions

The serological studies on EBL, performed in South-eastern Bulgaria in the period 1998-2000 showed a high prevalence of the infection (17.02% on average) with variations from 2.78% in the region of Haskovo to 33.07% in the region of Burgas.

Enzootic leukosis remains a principal epidemiological problem in the light of new conditions for the development of cattle breeding.

The restriction and the gradual eradication of the disease demand the strict execution of Acts from the national programme for prophylaxis and control of EBL.

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SAŽETAK

U razdoblju od 1998. do 2000. pretraženo je 200518 uzoraka seruma metodom imunodifuzije radi dokazivanja protutijela za virus goveđe enzootske leukoze u jugoistočnoj Bugarskoj. Rezultati su pokazali da je zaraza proširena u prosječno u 17,02% goveda (u rasponu od 2,78% na području Haskova pa sve do 33,07% na području Burgasa). Ovi podaci potvrđuju da bolest predstavlja veoma važan epizootiološki problem posebice u uvjetima suvremenog uzgoja goveda. Za suzbijanje i iskorjenjivanje bolesti važno je provoditi sve propisane programe.

Ključne riječi: enzootska leukoza goveda, jugoistočna Bugarska