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The surveillance and control programme for enzootic bovine leukosis (EBL) in Norway 2012

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The surveillance and control programme for enzootic bovine leukosis (EBL) in Norway 2012

Johan Åkerstedt, Madelaine Norström, Tormod Mørk

All milk and blood samples tested in 2012 were negative for antibodies against bovine leukaemia virus (BLV).

Introduction

Enzootic bovine leukosis (EBL) is caused by bovine leukaemia virus (BLV), in the genus retrovirus. Most infections are subclinical, but approximately one third of infected cattle older than three years of age develop persistent lymphocytosis, and a smaller proportion develop lymphosarcomas in various internal organs. EBL is classified as a list B disease in Norway and is notifiable to the Office International des Epizooties.

The disease had never been reported in Norway until antibodies against BLV were detected in eight dairy herds in samples collected through the surveillance and control programme in 1995 (1). No new herds have tested positive since 1997 (2), except a single positive bulk milk sample in one herd in 2002, and one blood sample from one of the cows in that herd. After extensive follow up, it was concluded that the positive antibody results were due to false positive reactions (3).

Free status from EBL was granted to Norway by the EFTA Surveillance Authority in 2007.

The Norwegian Food Safety Authority is responsible for carrying out the surveillance and control programme for EBL. The Norwegian Veterinary Institute is in charge of planning the programme, collecting the bulk milk samples from the dairies, and performing the tests. Official inspectors from the Norwegian Food Safety Authority collected the blood samples from beef cattle at slaughterhouses.

Aim

The aim of the surveillance and control programme for EBL in 2012 was to document freedom from the infection in Norway according to Council Directive 64/432/EEC as amended and to contribute to the maintenance of this favourable situation.

Materials and methods

The surveillance and control programme included both dairy and beef herds. Bulk milk samples from the dairy herds were provided by the dairies. From the beef herds, individual blood samples from animals older than 24 months were collected at 14 slaughterhouses, with a maximum of five animals per herd and day of sampling.

The target population of dairy herds consisted of all cattle herds delivering milk to dairies during the sampling period. In 2012, bulk milk samples from 1189 randomly sampled dairy herds were tested. The target population of beef herds was all herds delivering cattle to slaughter in 2012. A total of 1178 individual blood samples from 4306 beef herds were analysed in pools. The sampled herds represented approximately 15.7% of the Norwegian cattle herds (Table 1).

Bulk milk samples and blood samples were examined by an indirect enzyme-linked immunosorbent assay (ELISA; Boehringer Ingelheim Svanova, Uppsala, Sweden) at the Norwegian Veterinary Institute in Sandnes (4).

Table 1. Numbers of dairy herds and beef herds within the frame of the Norwegian surveillance and control programme for EBL in 2012

| Herd category | Total no. of cattle herds* | No. of herds tested | Per cent of herds tested of the total no. of herds |
|----------------|----------------------------|---------------------|--|
| Dairy herds** | 10,857 | 1,189 | 11.0 |
| *Beef herds*** | 4,200 | 1,178 | 28.0 |
| Total | 15,057 | 2,367 | 15.7 |

*Based on data from the Register of production subsidies as of 31 July 2012.

**Cattle herds delivering milk to dairies.

***Sampling performed at slaughterhouses.

Results

All bulk milk samples and blood samples tested in 2012 were negative for antibodies against BLV. Table 2 shows the results of the testing during the period from 1995 to 2012.

Table 2. Samples and results of antibody testing in the surveillance and control programme for EBL in the Norwegian cattle population during the period 1995-2012

| Year | Dairy herds | Beef herds | | No. of positive samples |
|------|---------------------------------|----------------------------|---------------------------|-------------------------|
| | No. of bulk milk samples tested | No. of beef herds sampled* | No. of individuals tested | |
| 1995 | 25,131 | 1,532 | 9,354 | 8 (bulk milk) |
| 1996 | 2,278 | 303 | 1,523 | 1 (bulk milk) |
| 1997 | 26,903 | 2,214 | 16,741 | 0 |
| 1998 | 23,581 | 2,191 | 17,095 | 0 |
| 1999 | 19,933 | 2,382 | 18,274 | 0 |
| 2000 | 1,590 | 340 | 2,892 | 0 |
| 2001 | 2,564 | 434 | 3,453 | 0 |
| 2002 | 2,308 | 462 | 3,693 | 1 (bulk milk) |
| 2003 | 1,845 | 449 | 3,901 | 0 |
| 2004 | 1,573 | 402 | 3,364 | 0 |
| 2005 | 1,919 | 484 | 4,766 | 0 |
| 2006 | 1,673 | 479 | 4,624 | 0 |
| 2007 | 1,575 | 412 | 4,241 | 0 |
| 2008 | 1,422 | 444 | 4,616 | 0 |
| 2009 | 1,315 | 435 | 5,038 | 0 |
| 2010 | 1,265 | 507 | 4,020 | 0 |
| 2011 | 1,226 | 1,278 | 4,758 | 0 |
| 2012 | 1,189 | 1,178 | 4,306 | 0 |

*Sampling performed at slaughterhouses in 2011 and 2012.

Discussion

The requirement from the EU for granting an EBL-free status is that the herd prevalence must be lower than 0.2%, which represents 30 herds out of the total number of 15 057 herds.

No new cases have been reported since 1997, and the continuous surveillance since 1995 shows that the Norwegian cattle population is free from EBL according to the requirements (2, 3). Initially, all cattle herds were tested annually. Since 2000, a minimum of 10% of dairy and beef cattle herds have been tested each year.

Together with the possible isolation period of six months and the testing protocol for imported animals, the surveillance and control programme for EBL should be an effective means to detect introduction of new infection.

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