Reduction of prevalence of persistent BVDV infection in cattle herds by long-term vaccination program (preliminary clinical study)

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Abstract

Effectiveness of long-term anti-BVDV vaccination program in reducing prevalence of persistent BVDV infection in cattle herds was evaluated in seven years observational study (2005-2011). Among three seropositive dairy cattle herds (within herd seroprevalence 100%, confirmed by ELISA Herd Check BVDV Ab, IDEXX, Sweden) vaccination program based on inactivated vaccine (cytopathic strain 5960) was commenced in 2007 in two herds and continued till 2010. In the years 2007-2011 all calves aged 2-12 weeks in all three herds were tested yearly with RT-PCR in order to detect persistently infected individuals. For the entire study period true prevalence of BVDV persistent infection was significantly lower in vaccinated than in non-vaccinated herd. This may imply the role of long-term vaccination program in reducing prevalence of persistent BVDV infection in cattle herds.

Key words: BVDV, persistent infection, calves, vaccination, eradication

Introduction

Bovine viral diarrhea virus (BVDV) is widespread in cattle population all over the world. The non-cytopathic biotype of BVDV causes fetal infection during the first trimester of pregnancy, what in turn leads to the delivery of persistently infected (p.i.) calves, which are crucial for virus in a population. Control programs based on vaccination as well as identification and elimination of p.i. animals allow for eradication of the disease in cattle herds (Moening et al. 2005). The objective of the study was to evaluate effectiveness of long-term anti-BVDV vaccination programs in reducing prevalence of persistent BVDV infections in cattle herds.

Materials and Methods

Three closed seropositive dairy cattle herds (A, B and C), where only inside replacements were raised for the entire study period, were taken into account for research purpose in years 2005-2011. Herd size ranged from 760 to 858 for herd A, from 1093 to 1175 for herd B and from 2078 to 2198 for herd C. In 2005-2006 serological testing covered only cows older
### Results and Discussion

Antibodies to BVDV were present in all three herds and true within-herd seroprevalence was 100% (98.6-100%). For the entire study period true prevalence of BVDV (Table 1) was significantly lower in vaccinated herds than in non-vaccinated herd (98.6-100%). For the entire study period true prevalence of BVDV within herds was 100% (98.6-100%).

<table>
<thead>
<tr>
<th>Year</th>
<th>Prevalence (CI 95%)</th>
<th>Prevalence (CI 95%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>0% (0-0.7%)</td>
<td>1.8% (1.0-3.4%)</td>
</tr>
<tr>
<td>2008</td>
<td>0% (0-0.4%)</td>
<td>0.8% (0.3-2.1%)</td>
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<tr>
<td>2009</td>
<td>0% (0-0.5%)</td>
<td>0.6% (0.2-1.9%)</td>
</tr>
<tr>
<td>2010</td>
<td>0% (0-0.4%)</td>
<td>1.0% (0.4-2.4%)</td>
</tr>
<tr>
<td>2011</td>
<td>0% (0-1.0%)</td>
<td>1.0% (0.3-3.6%)</td>
</tr>
</tbody>
</table>

For the entire study period true prevalence of BVDV within herds was 100% (98.6-100%).
References


