Farm specific transmission patterns of *Fasciola hepatica* in Danish dairy cattle based on different diagnostic methods and monitoring of grazing management

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Dairy cows:
- Don’t sample animals in 1st lactation
- 2nd lactation: Fecal sample
  - 3rd lactation and older: Milk, serum or fecal sample

Sampling of animal groups: At least 5 animals / group

Bovine fasciolosis in Denmark
- Increasing prevalence (herd: 29% for 2013; Olsen et al. 2015)

- Cattle: subclinical disease shown by reduced productivity (e.g., milk yield, reproductive performance), liver condemnation etc.


Parasit Vectors 8:160

Knubben - Schweizer & Torgerson (2015) Bovine fasciolosis: Control strategies based on the location of Galba truncatula habitats on farms.

Vet Parasitol 208 (2015) 77–83

What to do?
1. How to diagnose?
   - What?
   - When?

2. What to do?
   - Treatment
   - Prevention

New coproantigen test?
Fasciolosis – longitudinal study

Up-to-date knowledge and experience from Danish dairy farms is lacking

→ Longitudinal study of 4 dairy farms

**Aims:**

To describe infection dynamics on the 4 farm in terms of age groups (grazing history) and seasons

To compare seasonal changes in sensitivity and specificity of the different diagnostic methods
Fasciolosis – Materials and Methods

- 4 dairy farms – 2 organic and 2 conventional
  - Grazing animals
  - Milk control
  - Known high liver condemnation due to fasciolosis
- 7 visits during 2015-2017

<table>
<thead>
<tr>
<th>Farm</th>
<th>Prev. at slaughter (2013)</th>
<th>BTM ELISA value (2014)</th>
</tr>
</thead>
<tbody>
<tr>
<td>O1</td>
<td>33.3%</td>
<td>221.4</td>
</tr>
<tr>
<td>O2</td>
<td>27.7%</td>
<td>206.9</td>
</tr>
<tr>
<td>C1</td>
<td>30.4%</td>
<td>179.3</td>
</tr>
<tr>
<td>C2</td>
<td>16.1%</td>
<td>181.2</td>
</tr>
</tbody>
</table>

- Blood and feces from:
  - 11 X calves (never grazed)
  - 11 X heifers (grazed in 2014)
  - 11 X primiparous cows (grazed twice)
  - 11 X multiparous cows (grazed > twice)

Diagnostic methods
1. Monthly BTM ELISA
2. FEC by sedimentation
3. Serum ELISA (IDEXX)
4. Coproantigen ELISA (BioX)
Results – Diagnostic methods

FEC: Low Se

FEC: false positives, retained eggs in gall bladder

Antibodies lasting after worm expulsion

But these are not the whole story!!!
Monthly bulk tank milk
O1 Heifers at risk + re-infection as cows
C1 Heifers at risk + no re-infection as cows
Control by grazing management and treatment (triclabendazol at housing for heifers)

Cows are stabled
Conclusions & Perspectives

Conclusions

• Diagnostic methods
  • Serology detects exposure early after infection (summer-autumn), but prolonged
  • Coproantigen become positive later (autumn-winter) and maybe useful for older animals
  • Lots of FEC negatives
• Infection dynamics vary A LOT between farms
• Consider age groups (grazing history is important to identify risk pasture)

Perspectives

• Control (e.g. avoiding wet areas, avoid co-grazing of dry cows and heifers, treatment of heifers +/- dry cows)
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Questions and comments???