Cryptosporidiosis in Swedish Dairy Herds

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INTRODUCTION

This study was performed to estimate the prevalence of cryptosporidiosis in Swedish dairy herds and to identify risk factors for infection and disease

MATERIALS AND METHODS

Study Design

- 50 dairy herds with ≥50 cows from 5 regions
- Faecal samples were collected from 10 calves <2 months old, 10 young stock 4-12 months old and 5 periparturient cows in each herd. Blood was drawn from 1-8 day old calves
- Farmers were interviewed about herd management

Sample and Statistical Analyses

- Faecal samples were concentrated and cleaned using saturated NaCl-flotation
- Cleaned samples were stained with FITC-conjugated Mab against *Cryptosporidium*[1] and examined by epifluorescence microscopy.
- Blood was analysed for Total Protein (TP) content using a refractometer
- A logistic regression model was built for calves using Stata[2]

RESULTS

Cryptosporidium parvum

- 48 of 50 herds positive (96%)
- 52.3% of calves, 28.7% of young stock and 5.6% of cows positive
- TP lower in positive than in negative calves 1-8 days (54 vs. 57 g/L, p<0.05)
- Youngest positive animals 2 days old (n=3)
- *C. parvum* positive calves older than negative ones (23 vs. 31 days, p<0.001)

Cryptosporidium andersoni

- 1 calf & 6 young stock from 4 different herds positive

Multivariable model for calves

Significant factors influencing *C. parvum* status were:

- "Age" - OR 1.02 (CI 1.008-1.034), p=0.001
- "Prevalence in young stock" - OR 4.39 (CI 1.38-13.98), p<0.05
- "Routines for moving young stock" – All in all out - OR 0.74 (CI 0.38-1.43) and mixed all in all out/ continuous - OR 17.0 (CI 3.4-121.0) compared to continuous. Overall p-value of variable <0.05
- "Time together cow/calf", "№ of dead calves of last 20 born", "age when diarrhoea is most commonly seen" and "wet/faecal score of floors" were confounded to each other and to "routines for moving young stock" and were controlled for in the model

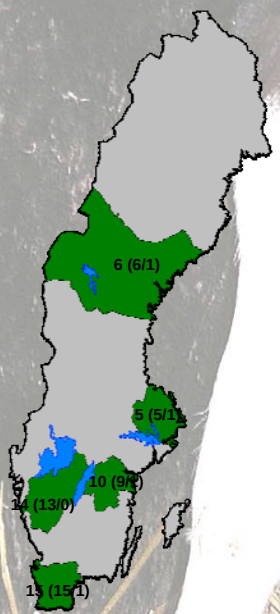

Figure 1: № of sampled herds (№ of herds positive for *C. parvum*/*C. andersoni*) in each sampled region

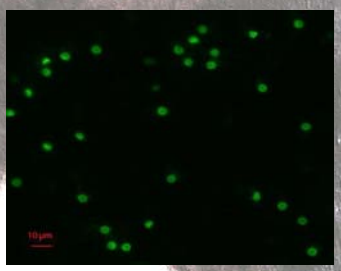

Figure 2: *C. parvum* in a 10-day old calf, shedding approx. 17 x10[6] oocysts/g faeces

Figure 3: *C. andersoni* (7.42 µm) and *C. parvum (4.26* µm) in a 6-month old heifer

CONCLUSIONS

- *C. parvum* was very common and *C. andersoni* was present in the herds
- For each day in life, risk for a calf being *C. parvum* infected increased, which reflects increased exposure time to oocysts
- A high prevalence in young stock was a risk factor for *C. parvum* infection in calves, and the routines for moving young stock affected calf *C. parvum* status
- There was a trend that the longer a calf stayed with the cow, the lower was the risk for infection. This might be due to the delayed time of exposure to the high infection pressure from infected calves
- No association between *C. parvum* infection and diarrhoea

Acknowledgements
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[1] Cellabs Pty Ltd, Australia
[2] Stata 9.2, StataCorp, College Station, Texas