Infectious agents identified by real-time PCR, serology and bacteriology in blood and peritoneal exudate samples of cows affected by parietal fibrinous peritonitis after caesarean section

Djebala S., Evrard J., Gregoire F., Thiry D., Bayrou C., Moula N., Sartelet A., Bossaert P.

Bovine Clinic, Sustainable Livestock Production, FARAH
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Introduction

A new predilection site of *Mycoplasma bovis*: Postsurgical seromas in beef cattle

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FOOD/FARMED ANIMALS

Atypical case of parietal fibrinous peritonitis in a Belgian Blue heifer without a history of laparotomy

Salem Djebala, Julien Evrard, Nassim Moula, Arnaud Sartelet, Philippe Bossaert

University of Liège. The heifer had undergone an artificial insemination (AI) 2 months before and had been confirmed pregnant by ultrasound examination. After AI, the heifer had shown a gradual reduction of feed intake, increasing symptoms of abdominal pain and hyperthermia. The referring veterinarian had treated the heifer intravenously with a non-steroidal anti-inflammatory drug, but no improvement was observed. Further examination revealed a large, thickened, firm peritoneal membrane, along with a 3 cm × 3 cm × 3 cm thickened peritoneal membrane covering the left hindlimb. The heifer was treated with a combination of antibiotics and anti-inflammatory drugs, and its condition gradually improved. However, the peritoneal membrane did not resolve completely, and the heifer was eventually euthanized.

Comparison between generalised peritonitis and parietal fibrinous peritonitis in cows after caesarean section

Salem Djebala, Julien Evrard, Nassim Moula, Linde Gille, Calixte Bayrou, Justine Eppe, Hélène Casalta, Arnaud Sartelet, Philippe Bossaert

Abstract

Background: Parietal fibrinous peritonitis (PFP) and generalised peritonitis (GP) are two postoperative complications in cows, characterized by fluid and fibrin accumulation throughout the peritoneum (GP) or in an area surrounding an abscess (PFP). The objectives of this study were to compare the clinical, pathological, and microbiological characteristics of PFP and GP in cows after caesarean section.

University of Liège. The heifer had undergone an artificial insemination (AI) 2 months before and had been confirmed pregnant by ultrasound examination. After AI, the heifer had shown a gradual reduction of feed intake, increasing symptoms of abdominal pain and hyperthermia. The referring veterinarian had treated the heifer intravenously with a combination of antibiotics and anti-inflammatory drugs, and its condition gradually improved. However, the peritoneal membrane did not resolve completely, and the heifer was eventually euthanized.
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Material and methods

qPCR + serology
(BoHV4, M. Bovis, C. burnetii)
+ bacteriology
**Results and discussion**

**Results of bacteriological culture** in peritoneal exudate samples, with specific focus on the 51 positive samples for *T. pyogenes* and 20 positive samples for *E. coli*.
Results and discussion

A) **Results of qPCR** in peritoneal exudate samples, with a specific focus on the 49 positive samples for *BoHV4*.

B) **Results of ELISA** in blood samples, with specific focus on the 56 positive samples for *BoHV4*. 

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**Diagram:**
- **A)** Negative qPCR for *Bovine Herpesvirus 4*, *Coxiella burnetii* and *Mycoplasma bovis* (n = 20)
  - *Bovine Herpesvirus 4* (n = 41)
  - *Coxiella burnetii* (n = 3)
  - *Mycoplasma bovis* (n = 0)
- **B)** Negative ELISA for *Bovine Herpesvirus 4*, *Coxiella burnetii* and *Mycoplasma bovis* (n = 11)
  - *Bovine Herpesvirus 4* (n = 32)
  - *Coxiella burnetii* (n = 1)
  - *Mycoplasma bovis* (n = 4)
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### Results and discussion

Combined results of ELISA (blood Samples) and qPCR (peritoneal sample) for BoHV4, *C. burnetii* and *M. bovis* in the 72 cows affected by parietal fibrinous peritonitis.

<table>
<thead>
<tr>
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<th>qPCR</th>
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<tbody>
<tr>
<td></td>
<td>Positive</td>
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<tr>
<td><strong>Bovine Herpesvirus 4</strong></td>
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<tr>
<td>ELISA</td>
<td>Positive</td>
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<tr>
<td></td>
<td>Negative</td>
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<tr>
<td><strong>Coxiella burnetii</strong></td>
<td></td>
</tr>
<tr>
<td>ELISA</td>
<td>Positive</td>
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<td></td>
<td>Negative</td>
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<tr>
<td><strong>Mycoplasma bovis</strong></td>
<td></td>
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<tr>
<td>ELISA</td>
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<td>Negative</td>
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Results of qPCR and ELISA of the three searched germs.
Infectious agents identified by real-time PCR, serology and bacteriology in blood and peritoneal exudate samples of cows affected by parietal fibrinous peritonitis after caesarean section

Results and discussion

Relation between ELISA and qPCR of BoHv4 with the bacterial culture results
Conclusion

- Parietal fibrinous peritonitis (PFP) can no longer be considered as a sterile process.

- Our study confirms previous reports of *M. bovis* in the peritoneal fluid of cows

- PFP is a new target sites for *BoHV4, C. burnetii* and other bacterial species

- The origin of the identified germs endogenous and exogenous contaminations of CS or due to the haematogenous spread.

- The exact role in these germs in the pathogenesis of PFP cannot be concluded, it requires further studies.
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Article

Infectious Agents Identified by Real-Time PCR, Serology and Bacteriology in Blood and Peritoneal Exudate Samples of Cows Affected by Parietal Fibrinous Peritonitis after Caesarean Section

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Thank you for your attention

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