Endometritis in the mare. A diagnostic study comparing culture from swab and biopsy.

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DVM, Specialist in Equine Reproduction

Endometritis – Dormant Strep and Treatment
ESER, 2018, Ghent, Belgium

Biopsy punch and swab

Obtained cultures

<table>
<thead>
<tr>
<th>Result</th>
<th>Number (%)</th>
<th>Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Swab – and Biopsy –</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Growth</td>
<td>128 (61)</td>
<td>128 (61)</td>
</tr>
<tr>
<td>E-Cell</td>
<td>2 (1)</td>
<td>2 (1)</td>
</tr>
<tr>
<td>Beta hem Strep</td>
<td>40 (19)</td>
<td>40 (19)</td>
</tr>
<tr>
<td>Staph Aur</td>
<td>2 (1)</td>
<td>2 (1)</td>
</tr>
<tr>
<td>Pseu Aero</td>
<td>2 (1)</td>
<td>2 (1)</td>
</tr>
<tr>
<td>Yeast</td>
<td>5 (2)</td>
<td>5 (2)</td>
</tr>
<tr>
<td>Total</td>
<td>212 (100)</td>
<td>212 (100)</td>
</tr>
</tbody>
</table>

Sensitivity

- Nielsen 2005
- Christoffersen et al. 2012
- Overbek et al. 2010
Endometritis in the mare. A diagnostic study comparing culture from swab and biopsy.

**New approach**

Using a specific oligonucleotide attached to a fluorophore, streptococci could be visualized deep in the sub epithelial tissue and in the endometrial crypts. Petersen et al. 2009.

**Strep infections – from acute to chronic**

Acute infection – superficial localization

Chronic infection – localized within the endometrium

**Classical dogmas**

- Uterus has to be sterile at implantation of the embryo
- Uterine infections stem from bacteria ascending from the lower reproductive tract through cervix

**New dogma?**

Resident infections may "blow up" as a response to a general inflammatory stimulus or a specific signal

- This may be represent a mode of transmission or survival strategy
- Dormant infections?

**Cell invasion**

Streptococcus equi subsp. zooepidemicus invades and survives in epithelial cells. Skive et al., 2017

**The prevalence of isolates from sexually rested and sexually active mares.**

<table>
<thead>
<tr>
<th>Month</th>
<th>April - September</th>
<th>October - November</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Strep</strong></td>
<td>312 (15%)</td>
<td>28 (1.5%)</td>
</tr>
<tr>
<td><strong>Other Strept</strong></td>
<td>337 (15%)</td>
<td>130 (7%)</td>
</tr>
<tr>
<td><strong>Staph Aureus</strong></td>
<td>22 (1%)</td>
<td>10 (0.5%)</td>
</tr>
<tr>
<td><strong>E. Coli</strong></td>
<td>42 (2%)</td>
<td>10 (0.5%)</td>
</tr>
<tr>
<td><strong>Streptococci</strong></td>
<td>18 (1%)</td>
<td>2 (0.1%)</td>
</tr>
<tr>
<td><strong>Mixed Growth</strong></td>
<td>27 (1%)</td>
<td>0 (0.0%)</td>
</tr>
</tbody>
</table>

Total: 420 (100%)

\*P > 0.5, \*P < 0.01
Possible explanations

- Beta hemolytic infections is not detected during the winter period because of dormancy.
- The manipulation of the cervix and the breeding of the mares results in more ascending infections with beta hemolytic streptococci during the breeding season.
- Most mares with a detected infection with beta hemolytic streptococci during the breeding season will receive treatment.

Which mares could be chronically infected ie. bActivate candidates?

- Not pregnant despite breeding to fertile stallions and good management
- Previous episodes of endometritis
- Pregnancy loss
- Uterine inflammation without presence of bacteria

+ 400 mares activated – 75% activation positive


<table>
<thead>
<tr>
<th>Activation</th>
<th>Pregnant</th>
</tr>
</thead>
<tbody>
<tr>
<td>+</td>
<td>28</td>
</tr>
<tr>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>31</td>
</tr>
</tbody>
</table>

- Activation positive, pregnant: 28/31 (90%) in 1.4 covers
- Activation negative, not pregnant: 4/9 (45%)

Use of bActivate – Treatment plan

- Problem mares
- Barren ≤ 3 cycles
- Different stallions
- Treated several times with different antibiotics

Timeline culture, activation and potential treatment

Treatment

- Vulvaplastic surgery, Caslicks procedure
- Uterine flush
- Antimicrobial treatment
- Ecbolics
- Inflammatory response down regulation
- Timing of ovulation and insemination

Petersen et al., unpublished
Treatment – Effect?

- 389 mares, 789 cycles, frozen semen
- Treated mares had same per season preg. % as non treated (No significant difference)
- In other words: If you identify a problem and treat it, you have a fair chance of getting a good result

 Nielsen et al. 2007

Take home message

- The best treatment of infertility is semen
- 80 % of mares get pregnant without any other treatment

 Troedsson and Nielsen, 2018

Vehicle of veterinarian Ansager 1912