Uterine yeast infection
Is the prognosis for pregnancy always guarded or bad?

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Case report, ESER 2018, Ghent, Belgium

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Introduction
- Literature review
  - Few or no studies calculates prevalence
  - Difficult to diagnose
  - Difficult to treat
    - Antifungals
    - Lavage
    - Correction of physical defects
    - Guarded to bad prognosis
  - Few or no studies calculates expected pregnancy rates

Two different types of fungal endometritis
- Yeast
  - Candida spp.
- Mould-like fungus
  - Aspergillus spp.
  - Others - Actinomyces, Trichosporon, Fusarium, etc.
- Most studies deals with these infections under the same umbrella regarding especially prognosis but also regarding clinical expression, diagnosis and treatment

Microbiology

Uterine lavage
- 0.9 % saline
- Ringers lactate
- Until clear reflux

Antifungals
- Polyenes
  - Amphotericine B, Nystatin, etc
- Azoles
  - Clotrimazole, miconazole, fluconazole, etc.

Correction of physical defects
- Caslicks surgery, cervix, etc

Systemic treatment?

Cytology

Yeast
- Large, ovoid, uneven sizes

Mould-like Fungus
- Hyphae

Treatment - Literature

- Uterine lavage
- Antifungals
- Correction of physical defects
- Systemic treatment?
This study
- Retrospective
- Two studfarms
- 3223 mares in three breeding seasons
- Fresh cooled or frozen semen
- 686 mares had endometrial biopsy
  - Cytology
  - Microbiology
- Mares with identified yeast infection treated as "protocol"
- Pregnancy result at 70 days in year bred
- Chi Square and odds ratio, P<0.05

Results - Growth
- 686 samples
  - 309 (45%) had positive growth
    - Hem. Strep, E. Coli, Staph Aureus, Enterococcus, Klebsiella, Pseudomonas, etc.
  - 50 (7.2%) had growth of yeast
  - 2 (0.3%) had growth of fungus

Results - Cytology
- 309 samples with positive growth

<table>
<thead>
<tr>
<th>Cytology</th>
<th>All other growth</th>
<th>Yeast</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>+</td>
<td>170 (55.0%)</td>
<td>39 (12.6%)</td>
<td>209 (67.6%)</td>
</tr>
<tr>
<td>-</td>
<td>89 (28.8%)</td>
<td>11 (3.6%)</td>
<td>100 (32.4%)</td>
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<tr>
<td>Total</td>
<td>259 (83.8%)</td>
<td>50 (16.2%)</td>
<td>309 (100%)</td>
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</tbody>
</table>

- p = 0.087

Results - Pregnancy
- 3223 mares inseminated

<table>
<thead>
<tr>
<th>Pregnant 70 days</th>
<th>Other</th>
<th>Yeast</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>+</td>
<td>2437 (75.6%)</td>
<td>24 (0.8%)</td>
<td>2461 (76.4%)</td>
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<tr>
<td>-</td>
<td>736 (22.8%)</td>
<td>26 (0.8%)</td>
<td>762 (23.4%)</td>
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<tr>
<td>Total</td>
<td>3173 (98.4%)</td>
<td>50 (1.6%)</td>
<td>3223 (100%)</td>
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</tbody>
</table>

- p < 0.0001
- Odds ratio = 3.59
- 95 % confidence level 2.05 to 6.29

Conclusion
- Pregnancy rate 70 d., overall= 76.4 %
- Pregnancy rate 70 d., yeast = 48.0 %
- Odds ratio 3.59
- Mares with yeast infection do have a more guarded prognosis
- Not all mares with a yeast infection are infertile
- We still need controlled studies on treatment and antifungals