Pregnancy diagnosis in the mare

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## The importance of pregnancy diagnosis

<table>
<thead>
<tr>
<th>Pregnant</th>
<th>Non pregnant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pregnant mares should be managed differently from non-pregnant mares (nutrition, work, exercise, medication).</td>
<td>Rapid handling to be pregnant within the same breeding season</td>
</tr>
</tbody>
</table>
Method of pregnancy diagnosis

1- History

Absence of the subsequent oestrous behaviour

Daily teasing from day 12 to 24
2- External sings
3- Transrectal Palpation

Idea

It depend up on detection of pregnancy associated changes in genital tract (ovary, uterus and its vascular supply)
I- Ovarian changes

1- Finding

0- 40 days
Endometrial cups (40-120)

EQUINE GESTATION HORMONES

PMSG
ESTROGENS
RELAXIN

Day 50

EC

Day 80

EC
150- full term
2- Position and movability
II- Uterine changes

Chorion

Amniotic Cavity

Yolk Sack

Allantochorion (Chorioallantois)
1- Size

30 days, Hen’s egg

35 days, goose’s egg
45 days, large orange

60 days, melon

90 days, small football

120 day, basketball
2- Position
3- Wall and Uterine content
III- Changes in the middle uterine artery
## Estimation of stage of pregnancy by rectal palpation

<table>
<thead>
<tr>
<th>Stage</th>
<th>Ovarian</th>
<th>Uterine</th>
<th>MUA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Wall, Size.</td>
<td>position</td>
<td>fetus</td>
</tr>
<tr>
<td></td>
<td>CV</td>
<td>Feř.</td>
<td>+ ve</td>
</tr>
<tr>
<td>30d</td>
<td>* High in sublumer region</td>
<td>* Tonic</td>
<td>• Hanged in the pelvic cavity</td>
</tr>
<tr>
<td></td>
<td>* Main Cl. And growing follicle</td>
<td>* Thinning of the wall over the bulge</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>* Ventral bulge (size of hen's egg)</td>
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<td></td>
<td></td>
<td>* Ventral bulge (size of small orange)</td>
<td></td>
</tr>
<tr>
<td>60d</td>
<td>* Begin to displaced</td>
<td>* Loss the tonicity</td>
<td>• Hanged in the pelvic cavity</td>
</tr>
<tr>
<td></td>
<td>* Main Cl. Accessory Cl. And multiple follicle</td>
<td>* Ventral bulge extend to the body (size of melon)</td>
<td></td>
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<td>Uterine</td>
<td>MUA</td>
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<td></td>
<td>Wall, Size.</td>
<td>position</td>
<td>fetus</td>
</tr>
<tr>
<td>90 d</td>
<td>* displaced</td>
<td>* Size of the football (in both horn and body)</td>
<td>• Descended over the pelvic brim</td>
</tr>
<tr>
<td></td>
<td>* Main Cl. Accessory Cl. And multiple follicle</td>
<td>• The tip of the horn reach the level of the pelvic brim</td>
<td></td>
</tr>
<tr>
<td>120 d</td>
<td>* Begin to displaced</td>
<td>* Size of the basket (in both horn and body)</td>
<td>• Descended in front of the pelvic brim (completely abdominal)</td>
</tr>
<tr>
<td></td>
<td>* Main Cl. Accessory Cl. And multiple follicle</td>
<td></td>
<td></td>
</tr>
<tr>
<td>150 d</td>
<td>* About 25 ventral to the lumbar vertebrae</td>
<td>* Huge size difficult to be detected</td>
<td>• Rest of abdominal floor</td>
</tr>
<tr>
<td></td>
<td>* Regression of ovarian structure</td>
<td>• Ventral surface cannot be palpated</td>
<td></td>
</tr>
<tr>
<td>Stage</td>
<td>Ovarian Wall, Size.</td>
<td>Uterine position</td>
<td>MUA fetus</td>
</tr>
<tr>
<td>-------------</td>
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<td>-----------</td>
</tr>
<tr>
<td>180-210d</td>
<td>* Reach the level of the pelvic brim and near to each other</td>
<td>* Huge size difficult to be detected</td>
<td>• Rest of abdominal floor - ve ±ve + Ve</td>
</tr>
<tr>
<td></td>
<td>* Difficult to be found</td>
<td>* Small, hard no structure</td>
<td>• Ventral surface cannot be palpated</td>
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210- full term

| * Reach the level of the pelvic brim and near to each other | * Huge size difficult to be detected | • Rest of abdominal floor - ve +ve + Ve |
| * Difficult to be found | * Small, hard no structure | • Ventral surface cannot be palpated |
4- Vaginal finding

1- Introduction of the speculum is difficult

2- Low tendency for ballooning

3- The vaginal mucus membrane is pale, dry or covered by sticky mucus

4- the portio is tightly closed, covered by sticky mucus, it drawn forward and pointed upward or laterally
5- laboratory tests

1- If the mare is too irritable to be examined

2- If the owner don't prefers the rectal palpation

3- If the rectum is simply too small for a manual examination

4- Unexperienced veterinarian

5- No available ultrasound
I- Mucin test

Idea

Searching for the pregnancy cells that appears in the cervical mucus as early as 20 days post coitus.

-20-40 days ..........77%

-50-70 days ..........80-90%

- 70 – full term ........94.8%
II- Tests searching for eCG

40 Begin
80 Reach the peak
120 Decrease to the lowest level
150 May continue for 150d

![Graph showing PMSG levels over time with key markers at 30, 60, 90, 120, and 150 days. The graph indicates the progression of PMSG levels across these time points.]

![Image showing a close-up view of a tissue sample labeled 'Day 60' with a specific marker labeled 'EC'.]
Biological tests

Idea

Injection of the mare serum into lab animal and searching for the effect of eCG on the genital tract
Aschheim - Zondek test (rat or mice test)

**Immature rat (22d)**
- 2ml serum or whole blood/day for 3 days I.P or SC
- 5ml serum or whole blood single injection
- Killed 3 days after I.P or 4 days after SC

**Immature mice (22d)**
- 0.2ml SC/ twice daily for 3 days
- 0.5ml SC single dose
- Killed 30-48h last injection
Friedmann [rabbit test]

Immature mice (14-20 week)

Injected with 10 ml I.V (ear vein)

Killed 18-24hr later
Galli maniani [frog test]

**Idea**

Male frog does not shed the sperm except after excited by female or injected with gonadotrophine.
Immunological test

• Higher accuracy
• The result obtained within short time
• Available in the form of kit
• Can applied for large number of animals in short time
Haemagglutination inhibition test

Mare serum that contain PMSG will prevent agglutination of erythrocyte coated with pregnant mare serum in presence of anti-PMSG

Dish coated with anti-PMSG

Serum contain PMSG

Serum not contain PMSG

Inhibit agglutination

Agglutination
### Accuracy

<table>
<thead>
<tr>
<th>Range</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>37-42</td>
<td>50%</td>
</tr>
<tr>
<td>42-60</td>
<td>80%</td>
</tr>
<tr>
<td>60-80</td>
<td>90-95%</td>
</tr>
<tr>
<td>80-120</td>
<td>80%</td>
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</table>

#### False +ve

Death of the embryo after formation of the endometrial cups

#### False –ve

- Application during incorrect time
- Overheating of the serum
- Mare produce low level of PMSG
III- Tests searching Estrone sulfate
Biological methods (Allen-Diosey test)

Idea

Injection of estrogenic compound into spayed mice or rat produce estrous like changes in female genital tract

Urine sample

- Detoxified
- 4% aq, sol.
- Sulphosalicylic acid
- Neutralized
- Sod. Bicarbonate
- Filtrated
- Diluted by water 1:2

Spayed mice or rat 2-3 week after spaying

- 0.5 ml/Sc twice daily for 3 days
- Vaginal swab 24-48 hr later
Chemical test (cuboni test)

Idea

Reaction of the free estrogen and warm conc. Sulfuric acid result in fluorescent green color

Urine → Centrifuged or filtrated → 15 cc urine + 3 cc conc. HCL

18 cc benzene and shaking

Aspirate the supernatant

Add 3-10 cc conc. H2So4

Boiled in water path

→ cooling

Water path at 80 °C for 5m
Equitest- ES
One-Step Rapid Pregnancy/Foal Viability Test For Mares