Benha University  
Faculty of Vet. Medicine  
Dept. of Theriogenology  
Three Hours  

Answer the following questions:

1- Write short notes on:  
a- The main features occurring during the embryonic stage. (5 degrees)  
b- Hormonal changes occurring during the fetal stage (5 degrees)  
c- Factors affecting the length of gestation period (5 degrees)  
d- Signs of maturity of the fetus at parturition (5 degrees)  

2- A buffalo cow at the 9th month of pregnancy came into the clinic suffering from a history of sudden colic, suspected to have a uterine torsion.  
a- What are the possible causes? (4 degrees)  
b- How can you diagnose and treat? (6 degrees)  

3- A cow in calving was admitted the clinic after 6 hours of ruptured fetal membranes, with complete cervical dilatation and only one limb outside the vulva.  
a- What can you suspect? (3 degrees)  
b- How can you manipulate. (7 degrees)  

4- Write an account on:  
1 - Possible causes of uterine inertia (5 degrees)  
2- Treatment of retained placenta in dairy cow. (5 degrees)  

Good Luck  
Prof. Dr. M.A. Abouel-Roos  
Head of the Department  

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**Answer the following questions:**

<table>
<thead>
<tr>
<th>1- Write short notes on:</th>
<th>(5 degrees)</th>
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<tbody>
<tr>
<td><strong>a- The main features occurring during the embryonic stage.</strong></td>
<td>This stage begins by the implantation and ends with the differentiation of the external body features. It includes the morula, blastula, gastrula, differentiation and body formation. During this stage the feto-maternal connection is well-established by means of the placenta. The most important processes taking place during this stage are:</td>
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<tr>
<td>a- Organogenesis.</td>
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<td>b- The implantation</td>
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<tr>
<td>c- The formation of the fetal membranes</td>
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<tr>
<td><strong>b- Hormonal changes occurring during the fetal stage</strong></td>
<td>(5 degrees)</td>
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<tr>
<td>- In cow, goat and buffalo (CL-dependant species); CL gravidatis is still necessary for maintenance of pregnancy.</td>
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<tr>
<td>- In mare, sheep and human (Placental dependant species); as the placenta becomes well developed, it carries on the duty of maintaining the pregnancy till full term.</td>
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<td>- Also, the placental hormones have also the duty of preparing the udder for lactation and the animal for parturition. It shares also in the maternal metabolism.</td>
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<td>- The placenta secretes estrogen, progesterone and in women and mare pituitary like gonadotrophic hormones.</td>
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<td>- Estrogen causes proliferative changes in the uterine tissue and increase its blood flow causing hypertrophy of its fibers.</td>
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<tr>
<td>- Progesterone is essential for the implantation of the ovum, formation of placenta and enlargement of the uterus. In most animals urinary pregnandiol reaches it’s maximum towards the end of parturition.</td>
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<tr>
<td>- The pituitary-like gonadotrophins are essential for pregnancy as they prevent the involution of C.L. when fertilization occurs; stimulate its growth to be C.L. graviditatis.</td>
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<tr>
<td>- In the mare; equine gonadotrophins are found in the serum from 35 days of gestation, reaches a maximum level between 50-80 days and gradually declines until they disappear at about 150 days.</td>
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<td><strong>c. Factors affecting the length of gestation period</strong></td>
<td>(5 degrees)</td>
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<tr>
<td>☀ <strong>Maternal factors:</strong> The age of the dam influences the duration of pregnancy in different species.</td>
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<tr>
<td>- Young heifers carry their calves for a slightly shorter period than older heifers.</td>
<td></td>
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<td>- In sheep elder than 8 years, has extended gestation period by two days.</td>
<td></td>
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<td>☀ <strong>Hereditary (genetic) factors:</strong> Every species of animal has its own nearly fixed gestation period, with small variation among breeds may be due to genetic, seasonal or local effects.</td>
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- Genotype of the fetus: hybrids between the horse and donkey, G.P. is close to paternal than maternal component of the fetus.
- Transfer of embryo from breeds of shorter gestation length than the donor, makes the G.P. of recipient is shorter.

**Fetal factors:** An inverse relation between the duration of gestation and litter size is well documented in several polytocous species except the pig.

A- Multiple fetuses in monotocous species have shorter G.P., and twin calves are carried 3-6 days less than single calves.
B- Sex of the fetus: male calves and foals are carried 1-2 days longer than females.
C- The endocrine functions of the fetus may influence the length of pregnancy duration.

**Pathological factors include:**
- Factors increasing G.P. as mole, mummified fetus and uterine torsion.
- Factors decreasing G.P. as trauma and diseases causing abortion as brucellosis, T.B.

**Environmental factors:**
- Feeding: well fed dam have shorter G.P. than under fed dams because of earlier time for their fetus to reach maturity than under fed one.
- Season of conception: Animals giving birth in winter or spring will have short G.P. this is due to the fact that the fetal growth rate is accelerated during the last 3 months of pregnancy when the dam receiving green fodder rich in vitamins and minerals.

<table>
<thead>
<tr>
<th></th>
<th>Calf</th>
<th>Foal</th>
<th>Lamb</th>
<th>Carnivores</th>
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<tbody>
<tr>
<td><strong>Weight</strong></td>
<td>25-40 kg depend on age, breed or 6-8 (1/12) of the mother before calving</td>
<td>30-60 kg depends on age, breed or 1/15 of the body of the mother before foaling.</td>
<td>1.5-3.5kg according to breed and number of feti given.</td>
<td>The weight of the fetuses varied greatly in the different species of dogs and cat.</td>
</tr>
<tr>
<td><strong>Length CVRL</strong></td>
<td>70-75 cm according to the age and breed.</td>
<td>100-150 cm according to age and breed.</td>
<td>40-50 cm</td>
<td>The length of the fetuses varied greatly in the different species of dogs and cat.</td>
</tr>
<tr>
<td><strong>Hairing</strong></td>
<td>2 cm all over the body 4 cm around umbilicus.</td>
<td>No hairs are found around the navil and the inner side of the thigh. Long hairs on the mane and tail.</td>
<td>Thick hairing in the area of the navil and lesser all over the body.</td>
<td>Mature born is covered with thick hair. The eye-lids are closed with an epithelial covering for 8-10 days during which the animal is blind.</td>
</tr>
</tbody>
</table>
1- Write short notes on:

2-A buffalo cow at the 9th month of pregnancy came into the clinic suffering from a history of sudden colic, suspected to have a uterine torsion.

a- What are the possible causes?  (4 degrees)

- Predisposing causes:
  - Hereditary causes.
  - Sudden falling of the animal.
  - Long stabling animals, and less exercise.
  - Under feeding.
  - Long transportation.
  - Lack of fetal fluids.
  - Anatomical defect, as unequal length of broad ligaments

- Actual causes
  - Unicornus pregnancy which leads to marked asymmetry of the uterine horns in cows.
  - The increased relaxation of the abdominal muscle in pluriparous cows and in old ages.

b- How can you diagnose and treat?  (6 degrees)

- Diagnosis:
  1) Case History:
     Tempany, colic, restlessness especially in late stage of pregnancy or shortly before parturition.
  2) Clinical Symptoms:
     - colicy Pain.
     - Restlessness.
     - Arched back.
     - Stretched abdomen.
     - Raising tail.
  3) Clinical examination:
     a) Vaginal examination: The direction of the folding of the vaginal mucous membrane denotes the direction of the torsion.
        - The degree of the torsion is determined by the part of the birth way that could be reached by the vaginal palpation.
        - If the cervix is still reached, then the torsion does not exceed 180.
        - If the hand of the examiner could hardly pass in the vaginal mucous membrane, then the torsion is 270.
        - If the hand is impossible to pass through the folds of the vaginal mucous membrane, the

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**Teeth**

| 4 milky teeth in the lower jaw, regular and well developed. | 4 milky regular and just erupting from the gum in both jaw. | The tips of cutting teeth are seen penetrating the gum. | No teeth are seen erupting from the gum. |

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torsion is 360
- In case of the high degrees of the torsion the vaginal tube is mostly completely closed.

b) Rectal examination:
- Must be done in doubtful cases to complete the examination, where the contracted middle uterine artery and the direction of the hard anterior border of the broad ligament act as a method for determining the place and the degree of the torsion.
- In the pre-cervical torsion, the diagnosis is more easier than other cases by the rectal palpation.

During the diagnosis of torsion you should identify:
- a- The direction of the torsion (Right or Left):
  - Determined rectally by finding out the direction of the dorsal surface of the genitalia.
  - It is found that 60-70% of the torsions are to the right side in cattle.
- b- The degree of the torsion (90º, 180º or 360º):
  - The most frequent are 90º and 180 degrees torsion.
- c- The place (site) of the torsion (post-cervical or pre-cervical):
  - Post-cervical (the vagina and the cervix included in the torsion).
  - Pre-cervical (the uterus only).

- Treatment:
  - Rotation of the fetus per vagina
  - Rotation of the cow's body by rolling.
  - Schaeffer's method
  - Surgical Treatment by Caesarean Section

3-A cow in calving was admitted the clinic after 6 hours of ruptured fetal membranes, with complete cervical dilatation and only one limb outside the vulva.

a- What can you suspect? (3 degrees)

The case is a protracted (delayed) dystochial case due to unilateral flexion of one or more of the limb joint(s) may or may not accompanied with deviation of head and neck (if the fetus in anterior presentation).

b- How can you manipulate. (7 degrees)

- Confine and restrain the cow so she’ll not get away and waste time.
- Wash off the recto-vaginal area as well as your hand and arm.
- Use an obstetrical lubricant, a mild soap or shortening as a lubricant (a plenty of artificial fetal fluids will be needed due to prolonged time from rupture of fetal sac until interference).
- Keep the fingers close together so as not to puncture the reproductive tract. Enter the vagina and identify the cervix or at least the extent of its dilation then determine the presentation and posture of the calf, as well as its relative size.
- If a leg is flexed or the head is deviated, repel the calf back into the uterus after fixation of the visible fetal parts between contractions and manipulate the calf body parts into proper position.
- Cover the calf feet and mouth with your hand during manipulation so as not to puncture the uterus.
- For normal traction, obstetrical chains are the most sanitary and most easily applied device for traction.

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4-Write an account on:

1 - Possible causes of uterine inertia. (5 degrees)

Uterine inertia is a failure of the doe’s expulsive efforts during delivery. And the possible causes:

**Primary Uterine Inertia caused**
- Inherited weakness of the uterus.
- Fatty infiltration of the myometrium.
- Bacterial infections that debilitate the uterus.
- Advanced age can result in inertia because the body operates less efficiently.
- Uterine rupture and uterine torsion.
- Uterine torsion
- weak abdominal muscles

**Secondary Uterine Inertia**
- This is due unsuccessful efforts to pass a mal-presented fetus or exhaustion from prolonged, unproductive labor.

2- Treatment of retained placenta in dairy cow. (5 degrees)

a- Manual removal:
- If the membranes are not released due to poor uterine contractions, the afterbirth may detach without damage by applying slight tension externally to the fetal membranes.
- Some type of antibiotic or antiseptic solution may be placed in the uterus as prescribed by a veterinarian.

b- Natural separation of retained placenta with or without the use of medication:
- Hormones such as prostaglandins, estrogens and oxytocin may be used to evacuate fluid and debris from the uterus.
- If evacuation is not successful with hormonal therapy, uterine irrigation may be recommended using warm water, followed by treatment with an antibiotic solution.
- A series of intrauterine infusions is usually more effective than a single treatment. The length and number of treatments considered should be determined on an individual basis as recommended by a veterinarian.