

## 2024 BATCH-LECTURE No. 15

### PREGNANCY DIAGNOSIS IN EWE

Dated: 27.03.2024

Various methods for diagnosis of pregnancy to be discussed over here comprises of following:

- Clinical observations of changes in animal after breeding,
- Fetal movements and ballotment of foetus,
- Radiography,
- Eletrocardiogram,
- Ultrasonic Doppler equipment for rectal insertion,
- Direct palpation of uterus through fingers

#### CLINICAL OBSERVATIONS OF CHANGES IN ANIMAL AFTER BREEDING:

1. Pregnancy diagnosis in the ewe is based primarily on post-conception clinical observations of changes in the animal such as:
  - i. Service by a male,
  - ii. Cessation of estrum, and in
  - iii. Advanced pregnancy, increase in the size of the abdomen and udder.
2. But during gestation up to 20 to 30 per cent of pregnant ewes exhibit an estrous period of about 18 hours duration one or more times.
3. These periods were most common during early pregnancy but also occurred even in the late stages of gestation.
4. Ovulation apparently does not occur.
5. It was reported that 94 per cent of ewes failing to return by 21 days after service were pregnant but matings must be closely supervised and observations recorded.

#### FOETAL MOVEMENTS IN ADVANCED PREGNANCY AND BALLOTT THE FOETUS:

In the ewe one can occasionally observe foetal movements in advanced pregnancy and ballot the foetus on the right side from 3 and ½ to 4 months of pregnancy to term.

#### RADIOGRAPHY:

Radiographic diagnosis of pregnancy can be made in 90 per cent of large ewes from 90 days of gestation to term and in a higher per cent in small ewes from 70 days of gestation to term.

#### USE OF FOETAL ELECTROCARDIOGRAM:

The use of the foetal electrocardiogram has not proven practical for pregnancy diagnosis in sheep.

#### USE OF ULTRASONIC DOPPLER INSTRUMENT BY RECTAL INSERTION:

1. Use of an ultrasonic Doppler instrument by rectal insertion was over 90 percent accurate in the detection of pregnancy in ewes and goats from 75 to 135 days of gestation.
2. This Doppler instrument detects movements of the foetus and the blood in the heart and large vessels of the foetus.

#### USE OF FINGERS FOR PALPATION OF THE UTERUS:

1. A direct method of palpation of the uterus with the fingers through a small abdominal incision in the inguinal region between 5 to 8 weeks of gestation.
2. With proper equipment and assistance this was a practical procedure and had an accuracy of 97 per cent.

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1. About 10 to 20 per cent of the embryos in sheep, especially with double ovulation, will undergo trans-uterine migration from one horn to the other.
2. Sixty-two per cent of single ovulations in ewes and 56 per cent of the multiple ovulation occurred in the right ovary.

#### OVINE FOETAL CROWN-RUMP LENGTH:

Ovine foetal crown-rump lengths at various stages of gestation are as follows:

30 days: 1.5 cm, 60 days: 5.0 cm, 90 days: 15 cm, 120 days: 27 cm and 150 days: 50 cm.

#### PREGNANCY DIAGNOSIS IN THE SOW:

Various methods used for diagnosis of pregnancy in sow and discussed in this lecture comprises of:

- Clinical observations of change in animal,
- Palpation of middle uterine artery,
- Urinary level of estrone
- Vaginal Biopsy.

#### CLINICAL OBSERVATIONS OF CHANGE IN ANIMAL:

Clinical observations of change in animal may be used to diagnose pregnancy in swine as in sheep, cattle and horses.

#### PALPATION OF MIDDLE UTERINE ARTERY:

A method of palpation of the enlarged, thin walled middle uterine artery per rectum the third month of pregnancy in large sows weighing over 325 lbs can be used for diagnosing pregnancy.

#### URINARY ESTRONE LEVELS:

1. Pregnant sow excretes high urinary levels of estrone at 4 to 5 weeks, 26 to 30 days, of gestation and at a second peak about 11 to 12 weeks, 75 to 90 days, of gestation.
2. Pregnant sows excreted an average of 25.6 mg of estrone per 100 ml of urine, range 5.7 to 73.5 at 26 to 30 days of gestation while non pregnant sows excreted an average of 1.6 mg per 100 ml, range 0.5 to 4.3.
3. Based on farrowing, this test was 90.3 per cent accurate.

#### VAGINAL BIOPSY METHOD:

1. In recent years a vaginal biopsy from 31 to 90 days of gestation has proven about 94 per cent accurate in pregnancy diagnosis.

- i. A biopsy specimen is taken from the anterior vagina of the sow without restraint at the time of feeding and placed in 10 per cent formalin solution.
  - ii. After sectioning and staining with hematoxylin and eosin the epithelium is examined.
  - iii. Pregnancy is characterized by a thin epithelial layer of up to 2 to 4 rows of cells totalling about 12 to 14 microns in thickness.
  - iv. Sows in diestrus have epithelium of up to 4 to 5 rows of cells thick, and 20 to 24 microns in thickness.
  - v. Sows in estrus have a greatly thickened vaginal epithelium.
2. This technique could be practical in large well-managed herds.

#### FOETAL CROWN-RUMP LENGTH:

The foetal crown-rump length of swine foetuses at various stages of gestation is:

30 days: 1.8 to 2.5 cm,

60 days: 8 to 11 cm,

90 days: 17 to 23 cm,

At farrowing: 23 to 29 cm.

#### PREGNANCY DIAGNOSIS IN THE BITCH AND CAT:

1. During pregnancy in the bitch there is usually a marked progressive increase in abdominal size from 35 days to term due to deposition of fat and the increase in size and weight of the uterus.
2. The teats between 35 to 45 days of gestation become enlarged and turgid.
  - i. After 45 days they soften and become still larger.
  - ii. The mammary glands become enlarged and edematous from 50 to 55 days of pregnancy.
3. Since these changes are even present, but usually less apparent, in non pregnant bitches following estrus due to the pseudo-pregnant state, one must be careful in diagnosing pregnancy on the basis of the above signs.
4. Pseudo-pregnancy in the bitch extends for approximately the same period of time as gestation, and is frequently followed by lactation if suckling is allowed.
5. In dogs abdominal distention may also result from ascites, splenic enlargement, abdominal tumours, pyometra, or other causes.
6. Palpation of the uterus through the abdominal wall is one of the best methods of diagnosing early pregnancy in the bitch.
  - i. The ease with which this is done will depend on a number of factors such as:
    - a. The temperament of the dog,
    - b. The size of the dog,
    - c. The period of gestation,
    - d. The number of foetuses in the uterus and
    - e. The degree of obesity.

- ii. AT 18 TO 21 DAYS the embryos and their chorioallantoic vesicles produce a series of round swellings about 1.25 cm in diameter in the uterine horns which frequently may be difficult to palpate at this time through the abdominal wall.
- iii. FROM 24 to 32 DAYS of pregnancy these round ping-pong ball like swellings in the uterus are about 2.5 to 4.0 cm in diameter and are usually readily palpable.
- iv. FROM 35 to 45 DAYS the swellings increase in size, elongate, lose their tenseness and come to rest on the abdominal floor and in some cases abdominal enlargement is noticeable.
- v. AT 40 DAYS OF GESTATION these uterine swellings are 5.4 X 8.1 cm in pregnant Beagle bitches.
- vi. It is easier to palpate the caudal portions of the uterus.
- vii. Fecal material in the colon should not be confused with pregnancy.
- viii. From 45 to 55 days of pregnancy the size of the uterine horns and foetuses increase rapidly,
- ix. The caudal foetuses are about 7.5 cm long in medium size dogs and may be palpated.
- x. The horn, since it is greatly distended and elongated, is usually bent in the middle at the liver,
- xi. The apical portion of the horn is bent caudal and lies lateral dorsal to the cervical portion of the horn.
- xii. From 55 to 63 days the size of the foetuses are such that they can readily be detected.
- xiii. Rectal palpation with the finger with the forequarters elevated often is successful if abdominal palpation is difficult.
- xiv. The crown-rump length of the canine foetus at various stages of gestation are:  
21 days: 1.0 cm, 30 days: 1.0-3.0 cm, 40 days: 5-8 cm, 50 days: 12-14 cm, and 60 days: 16-21 cm.

Similar techniques of abdominal palpation may be used in the cat but with greater ease, due to the thin abdominal wall.

Biological tests are not available in the bitch and cat.

Radiography may be a helpful diagnostic aid in the bitch especially late in pregnancy since foetal bones calcify during the last 15 days of gestation. With careful technique and experience the introduction of air, 200 to 800 ml, depending on the size of the dog, into the abdominal cavity producing pneumo-peritoneum, may delineate the swellings in the uterus as early as 30 to 35 days of pregnancy.

The ultrasonic Doppler instrument has been shown to be useful in dogs to diagnose pregnancy from 32 to 35 days of pregnancy to term.

