

2024 Batch-Lecture No. 11

Examination for pregnancy-----Continues

THE HORN OF THE PREGNANT BOVINE UTERUS NOT CONTAINING THE FOETUS:

1. It may vary greatly in size.
2. In most bovine pregnancies a portion or usually all of the non gravid horn takes part in the placental attachment.
3. There is a progressive enlargement of the gravid horn, the uterine artery and placentomes but they never reach the size of the gravid horn.
4. In possibly 10 or 20% of cows, some or most of caruncles and cotyledons in the non gravid horn fail to develop normally or may be absent, in which case the horn is smaller than normal or is non functional.
5. As a result an excessive burden may be placed on the gravid horn, with a hypertrophy on the placentomes causing them to become 15 cm in diameter in some cases.

EXAMINATION OF THE OVARIES:

1. Gently grasp the ovary between the first and second fingers and palpating the unattached surface with the thumb.
2. The ovary following ovulation develops a corpus luteum in the ruptured follicle.
3. If fertilization and development of the ovum and embryo proceed normally this corpus luteum persists throughout pregnancy in the cow.
4. The corpus luteum of pregnancy or corpus luteum verum is slightly larger 2.46 cm in diameter and 6.5 gm in weight than the corpus luteum of the estrual cycle 2.3 cm and 5.7 gm, respectively.
 - i. These small differences are of no diagnostic value.
 - ii. However, as pregnancy progresses the corpus luteum tends to develop a darker golden brown colour and its projection above the surface of the ovary is less prominent due to a heavy layer of epithelium and stroma that covers it.
 - iii. It remains essentially the same size until near parturition.
5. Records on large numbers of cows indicate that the right ovary is more active than the left.
 - i. It has been reported that 60 percent of the ovulations were on the right ovary and 60 per cent of the foetuses were in the right horn in dairy cattle.
 - ii. But another report regarding pregnant beef cows indicated that the number of foetuses occupying each horn was nearly equal.
6. With few exceptions the corpus luteum of pregnancy is on the ovary corresponding with the horn of the uterus containing the foetus.
7. If a rectal examination of a cow 18 to 24 days after service reveals a normal corpus luteum on one ovary and no signs of estrum, the examiner can be reasonably sure that conception has taken place.
8. These early diagnoses are about 80 to 90 percent accurate.
9. This can be confirmed on re-examination at 40 to 50 days by the presence of the corpus luteum in the site on the same ovary with typical changes occurring in the gravid uterine horn.

10. The removal of the bovine corpus luteum of pregnancy the first 5 months of gestation will invariably result in abortion.

VAGINAL CHANGES DURING PREGNANCY:

1. Vaginal changes during pregnancy as determined by examination with a speculum and light or manually may be of some diagnostic value but are of only secondary importance to the uterine changes.
2. During pregnancy the vagina usually develops a pale, dry, sticky mucous membrane similar to that observed in diestrus.
3. The external os of the cervix is closed and pale.
4. In about 60 to 70 percent of the cows the cervical seal which forms after conception increases in size until it protrudes or covers the external os and is visible and palpable between 40 to 120 days of pregnancy.
 - i. In the rest of the cattle it is present in the cervical canal but does not become visible.
 - ii. The seal is a translucent, whitish mucus that is very tough, adhesive and tenacious.
 - iii. This seal may remain after the fetus has died in such diseases as mummification of the foetus and trichomoniasis with foetal maceration.
5. Occasionally there may be a normal pregnancy with a cervicitis of the external os and a purulent vaginitis.
 - i. In such an instance, the cervical canal and internal os have a normal cervical seal present.
6. There is in rare case a condition characterized by a cervical seal of large proportions called muco cervix.
 - i. This is characterized by a cervix with a diameter of 7.5 to 10 cm, filled with a tenacious mucus and accompanied by a persistent corpus luteum or cyst and failure of estrus.
7. Just prior to parturition and abortion the cervical seal breaks down and is discharged in strings.
 - i. The vaginal mucus membrane becomes more moist and hyperaemic, and the cervix relaxes and dilates.
 - ii. Thus a vaginal examination is of value in diagnosing impending abortion or parturition.
8. Passing a catheter or insemination pipette through the sealed cervix in a pregnant cow may introduce infection into the uterus and cause death of the foetus and subsequent abortion.
9. In advanced pregnancy a manual examination of the vagina frequently reveals the presence of a portion of the uterus and foetus in the pelvic cavity dorsal or lateral to the vagina. The cervix is pulled forward by the weight of the gravid uterus, causing a lengthening of the vaginal cavity.

BIOLOGIC AND CHEMICAL TESTS FOR THE DIAGNOSIS OF PREGNANCY:

1. These are not as accurate as the rectal diagnosis of pregnancy.
2. By testing the consistency or flow elasticity of cervical mucus with a consistometer, diagnosis was 80 to 90 percent accurate from 5 to 6 weeks to term. Pathology of the external os of the cervix interfered with the test.

3. Smears of cervical mucus during estrum when dried produce long fern-like crystals due to the sodium chloride present in the cervical mucus smears in the estrogenic stage of the estrous cycle. The crystalline pattern is lacking in cervical mucus smears made during the luteal phase of the cycle or during pregnancy. A direct test for the presence of sodium chloride in cervical mucus has also been described.
4. A possible diagnostic test for pregnancy by placing a balloon filled with air into the bovine vagina and administering oxytocin intravenously.
 - i. In pregnant cows, cows in estrum, and cows with cystic ovaries, the vaginal wall contracted on the balloon and this could be recorded by a manometer.
 - ii. Non pregnant cows showed little or no pressure changes
5. By using these tests singly or in combination an 80 to 90 per cent accuracy in diagnosing bovine pregnancy could be obtained.
6. Thus these tests lacked the accuracy and ease of application of the manual rectal method of pregnancy diagnosis.
7. Milk Progesterone analysis:
 - i. Low progesterone 19 to 23 days after insemination is an accurate indication the cow is open (Non pregnant). It is highly accurate, this is why this test is called detection of open cows.
 - ii. However, high progesterone obtained during this time is not an absolute sign the cow is pregnant. Several studies have shown it to be 75 % accurate in determining if the cow is definitely pregnant.
 - iii. The kits manufactured for this test are based on ELISA.
 - iv. In most kits, assays produce a colour reaction that can be read visually or through an electronic scanner.
 - v. Results, usually obtained within a half hour, are compared with a standard containing known concentrations of progesterone.
8. Detection of pregnancy associated glycoprotein in blood circulation on 24-28 days after breeding is now emerging as a test for early pregnancy diagnosis. Pregnant cows had higher levels of pregnancy associated glycol-proteins as compared to non pregnant cows on day 24.