

**UNIT:4 (ANIMAL HUSBANDRY
& POULTRY)**

Induction
Of
Early
Puberty
(Estrous)

1.2) Induction of early puberty and synchronization of oestrous in cattle.

Reproduction is a cyclic process and it includes breeding as an important phenomenon. Large animals breed at precise / particular time of year & some time. This span of time is constant.

Most of the mammals are seasonal breeders and breed only in some specific period of the year. In such animals, the female becomes sexually responsive only in a particular season. e.g. Breeding season is autumn for sheep, and spring and autumn for bitches. This brief period of intense sexual responsiveness of female is called

Oestrous / Estrus / Ovarian Cycle / Heat period during which a sexually responsive female like copulation & undergoes ovulation so that fertilization and pregnancy are possible.

But whole of this process requires sequence of processes so that the breeding period is controlled by hormones which lead to onset of puberty in cattle.

For this a cycle of events is ~~is~~ ⁽²⁾ established within gonads which comprises the growth of the gonads. The release of sex cells followed by changes in case of ovary, its left over ovarian / egg membranes and all these changes are under control of hormones.

Growth of Eggs → These gonadal changes
by FSH. are not only concerned

with fertile eggs but some time eggs in ovary also ~~become~~ show atresia that is perishing of eggs & this is result of non-availability of gonadotropic hormones to the eggs.

In the ovaries, hormones are also needed for product of conception in case of viviparous vertebrates.

Follicular phase and Luteal phase are commonly used to describe 2 parts of estrous cycle. It is easy to describe this cycle in terms of ovulatory intervals particularly in mammals. The intervals comprise of luteal phase of one cycle and follicular phase of next cycle.

Events in estrus cycle are regarded as changes in ovary as also

① Prooestrous phase: It is the "building up" phase and is characterised by:

- a) Ovarian follicle increase in size due to increase in follicular fluid.
- b) Ovarian follicle secretes estrogenic hormones which induce the following changes:
 - 1) Increased vascularity and growth of genitalia
 - 2) Uterus and Vagina become more glandular and secretory.

∴ But copulation does not occur during this phase.

2) Oestrous phase (Heat period): It is period of copulation between sexes & have following characteristics:

- a) Vaginal epithelium further thickness and keratinised.
- b) Graafian follicles become mature
- c) Ovulation occurs generally spontaneously and ovum passes into fallopian tube. But in animals like cats, rabbit, mink etc ovulation is stimulated by coital activity i.e. through nervous stimulation.

This period oestrous phase is of different duration in diff animals e.g. 18 hrs in cows, 9 to 15 hrs in cats, nine days in dogs.

(4)

3) Metoestrous phase: It is post-ovulatory phase & is characterized by:

a) Empty follicle transformed into a yellow coloured & highly vascular endocrine gland i.e. corpus luteum

b) Decrease in oestrogen secretion but increase in progesterone secretion.

c) The uterine endometrium becomes softer, thicker, more vascular and more glandular. So uterus prepares itself for implantation.

If the ovum remains unfertilized, the corpus luteum degenerates, progesterone secretion decreases and uterine & vaginal lining gradually revert to their original condition.

4) Diestrous and Anoestrous phase: It is a short resting interval of quiescence between two oestrous cycle in polyoestrous animals c.g (rat - diestrous pd is of 4-5 days)

While Anoestrous is the resting non-sexual pd & can extend upto next breeding season in monoestrous mammals. So it is a quiescence period during which the female does not copulate with male.

So we can say that oestrous cycle
occurs in all non-primate who do not
undergo menarche & copulation occurs
only when female is in oestrous or
heat period