

Prevent Cystic Ovaries

A 1986 study among Michigan dairy herds estimated the average economic loss for cows with cystic ovarian disease (COD) to be \$137 per lactation, including effects on reproduction, culling, veterinary costs and labour. What exactly are cystic ovaries, what causes them and how can they be prevented and treated?

The normal heat cycle

Figure 1 shows the normal sequence of events that occurs in the cow's ovaries during her estrous (heat) cycle. Relative levels of the hormones that control these events are also shown. During the 4 to 5 days before the cow comes into heat, a dominant follicle develops on one of the ovaries. Just after she begins to show standing heat, the follicle ruptures, shedding an egg into the oviduct. Follicle rupture is initiated by Gonadotropin Releasing Hormone (GnRH) which stimulates the release of Luteinizing Hormone.

Once the egg has been shed, the capsule of the follicle develops into a corpus luteum - latin for 'yellow body' - its colour due to a very high content of beta-carotene. The corpus luteum (CL) continues to develop for the next 12 to 13 days of the cycle, producing progesterone which prevents the development of new dominant follicles and maintains the uterus in a receptive state for conception. If conception doesn't occur, the CL regresses as a new dominant follicle develops.

Cystic ovaries

A cyst is usually diagnosed as a large (more than 2.5 cm in diameter), persistent, spherical structure on one of the ovaries. The more common type is a follicular cyst, where the follicle fails to rupture but continues to grow. Since no egg is shed, conception is impossible. Less common are luteal cysts, where the CL fails to regress and continues to produce progesterone, blocking further follicle development. Cysts are normally detected by rectal palpation but it is often difficult to distinguish the two types.

What causes cysts?

There is general agreement that cysts are a result of hormonal imbalance. But what factors are responsible for causing this imbalance? Those that have been most commonly implicated include nutrition, high production, genetics, age, season, metritis, mastitis, ketosis and plant hormones.

It is likely that any of these factors and more can be involved. Current thinking is that the cyst-producing hormonal imbalance is a direct result of stress. A recent survey of farms in the Netherlands demonstrated a strong correlation between early lactation production, body condition loss and cystic ovaries. The authors of the study concluded that the metabolic stress of negative energy balance was the cause in the majority of the cases they surveyed.

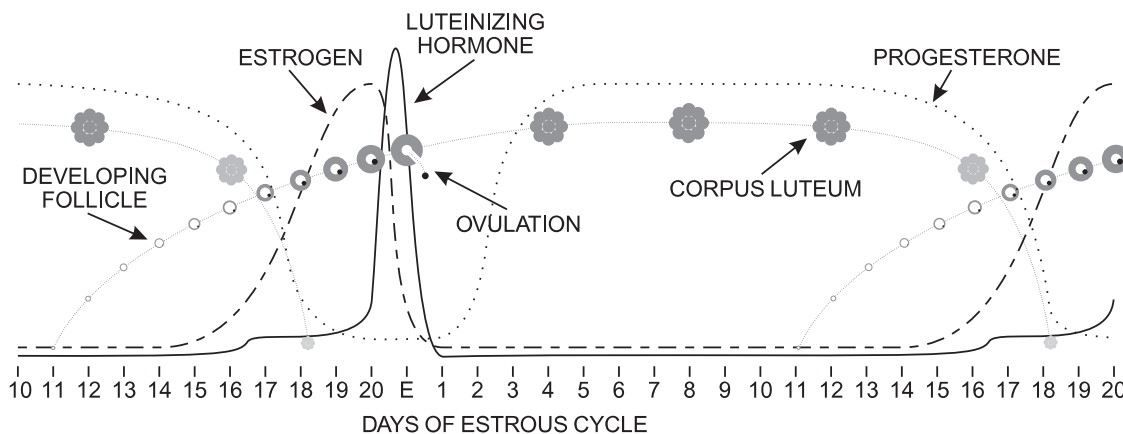


Figure 1 : Blood hormone levels and normal events in the ovaries during an estrous (heat) cycle. If the follicle fails to ovulate, a cystic follicle may form. A luteal cyst results when the corpus luteum fails to regress and continues to produce progesterone.

Researchers in the US have suggested that the stress response resulting from metritis and mastitis can also interfere with reproductive hormone balances. Toxins produced by infectious bacteria have been clearly shown to provoke the release of stress hormones. In turn, these hormones interfere with the release of those responsible for the rupture of ovarian follicles.

Normal incidence

The highest incidence of COD occurs between 20 and 50 days after calving (figure 2), in older cows and in the fall and winter months.

In the Michigan study mentioned above, cystic cows produced 422 kg more milk than their herdmates (305 day mature equivalent). Cystic cows in the Dutch study also had higher production per day of lactation (23.3 kg vs 22.9). These observations do not indicate that a cow's production will increase if she becomes cystic, but that high producing cows are more susceptible to COD.

How to prevent cystic ovaries

If cystic ovaries are a direct result of stress, then COD prevention should be approached by minimizing stress and by preparing cows to cope with the stresses they inevitably encounter. Good nutrition is essential. This is no more true in preventing cystic ovaries than it is in maintaining resistance to other challenges encountered by the cow.

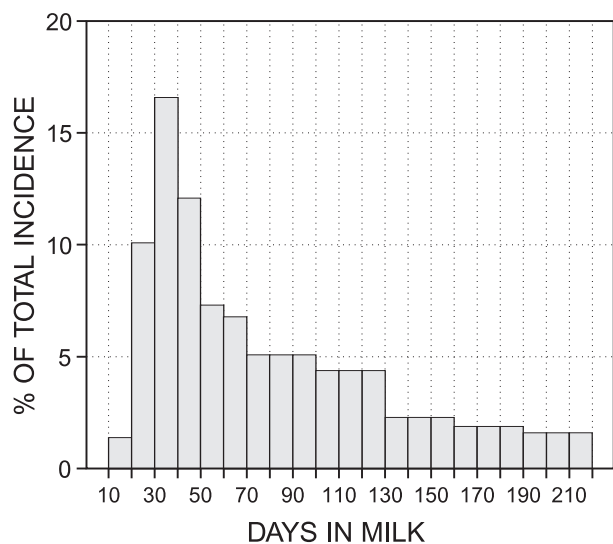


Figure 2 : Post-calving COD incidence from Michigan survey.

Prevention has to begin with condition scoring midway through the previous lactation. During the last half of lactation, cows should be fed to achieve a score of 3.5 - 3.75 at dry off and maintained at this level through to calving. Adequate (but not excessive) body reserves will help to reduce negative energy balance in early lactation.

The dry cow feeding program demands attention to the specific needs of the cow at this stage of her production cycle. In particular, close-up rations must be designed with the objective of minimizing the incidence of milk fever, ketosis, displaced abomasum and other disorders which occur after calving. Trace mineral and vitamin intakes are often inadequate in the dry period when cows are not receiving supplemental grain. Several studies have demonstrated the beneficial effects of supplemental selenium along with vitamin A, vitamin E and beta-carotene in maintaining immune competency and reducing the incidence of mastitis in fresh cows.

Treatment of cystic ovaries

Although priority must be given to prevention, it is inevitable that even the best managed herds will encounter a few cystic ovaries. It is important to remember that cysts can be either follicular or luteal because treatment is very different for each.

Follicular cysts can be treated with GnRH, manual rupture, or drainage with a needle. Much care must be taken if cysts are manually ruptured since excessive manipulation may result in reduced fertility due to scar tissue formation. GnRH treatment is widely used. However, it is moderately expensive and most researchers report only a 60-70% success rate. Luteal cysts are best treated with prostaglandins and they usually respond very well.

The most important factor contributing to the successful treatment of cystic ovaries is an accurate diagnosis. Consultation with your local veterinarian will ensure maximum treatment success rates.

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