

# Cow-Calf and Dairy Section Combined Session

Dr. Robert Keith, Chairman

## Effect of Repeat Treatments of Gonadotropin-Releasing Hormone in Cows with Ovarian Follicular Cysts

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The isolation, characterization, and synthesis of gonadotropin-releasing hormone (GnRH) provided a new hormone for treatment of ovarian cysts in cattle. Since this hormone can be synthesized rather easily, relatively large amounts of the pure product are available for experimental evaluation.

Tests have been performed to determine the proper dose for treatment of ovarian cysts and several studies show that 79 to 82% of cows with ovarian cysts responded to a single intramuscular dose of GnRH.

Cystic ovaries have been treated with various products and Table 1 lists five different types of treatments as well as the percent recovery for each treatment. The results show that products high in luteinizing hormone (LH) activity (HCG and vetrophin) or LH-releasing activity (GnRH), produce clinical recovery in 66 to 82% of the cases treated.

Table 1  
Treatments for Ovarian Cysts in Cattle  
and Their Clinical Response

Type Treatment	Clinical Response
Manual rupture	45%
10,000 HCG* I.M.	82%
5,000 HCG I.V.	78%
2,500 HCG I.V.	74%
10 RU Vetrophin IV	66%
5 RU Vetrophin IV	69%
100 mcg GnRH	80%
No treatment	20-69%

\*HCG, human chorionic gonadotropin

The purpose of the present study was to determine the percent recovery in cows having ovarian cysts that required one, two, or three treatments of GnRH. Cows that failed to recover following three GnRH treatments would be treated with a different hormone.

### Materials and Methods

This study was performed in 25 herds of dairy cattle that are on a fertility herd health program conducted by the College of Veterinary Medicine at the University of Minnesota. The herd sizes ranged from 25 to 210. A total of 225 cases of ovarian cysts were treated with GnRH from March 1, 1975, to August 30, 1976. Diagnosis of ovarian cysts was based on palpation of a fluid-filled follicle 2.5 cm in diameter or larger. Clinical recovery was based on the absence of a palpable ovarian cyst, presence of a mature corpus luteum, or insemination and pregnancy following treatment.

### Results

The number of days from calving to treatment of ovarian cysts is presented in Table 2. Approximately one-half of the cases of cysts were detected and treated with GnRH within 60 days following calving. Most of the cows that responded to GnRH came into estrus 15 to 30 days following treatment.

Table 3 shows the percent recovery of ovarian cysts following first, second and third treatments with GnRH. There were 213 of 225 cases (95%) that recovered after first or second treatment, leaving only 12 cases that required a third treatment. Following the third treatment, four of these cows recovered and

became pregnant, four cows recovered clinically but were repeat-breeders, and four cows remained cystic. The four remaining cows with ovarian cysts were treated with 10,000 U.S.P. units of HCG intramuscularly. Two of these recovered and became pregnant and the other two cows did not respond.

Table 2  
Days From Calving to Treatment  
of Ovarian Cysts with GnRH

Days After Calving	No. of Cases
0-30	26 (12%)
31-60	91 (40%)
61-90	41 (18%)
91 or more	67 (30%)
Total: 225	

There were 194 of the 225 cases that had been inseminated for more than 30 days and were examined for pregnancy. The conception rate on first artificial insemination was 49% (95/194). A total of 173 of these 194 cows eventually became pregnant (89%) and the remaining 21 cows were culled as repeat-breeders.

Table 3  
Clinical Recovery of Ovarian Cysts  
Following GnRH Treatment

No. of Treatments	Percent Recovery
1st Treatment	76% (170/225)
2nd Treatment	78% (43/55)
3rd Treatment	66% (8/12)

### Discussion

The response to first GnRH treatment of ovarian cysts observed in this study is similar to those previously reported and also similar to recovery rates observed following first HCG treatment. Several recent studies have compared the clinical response and hormone levels detected after treatment of ovarian cysts with GnRH and HCG. The conclusion reached from these studies was that there were no differences in recovery rates or hormone levels following treatment and that both hormones were equally effective in treating ovarian cysts.

When ovarian cysts fail to respond to an injection of LH or HCG, it is recommended that a larger dose be given or a different product used. These gonadotropin hormones are foreign proteins to the cow and have been shown to produce antihormones. Just how important this is regarding their repeated use in nonresponsive ovarian cyst cases is difficult to determine. It has been recently demonstrated that it required five injections of HCG before antihormones and ovarian refractariness developed. In this same study, GnRH failed to produce antihormones and ovarian refractariness after 18 injections. Because GnRH is a pure synthetic hormone of low molecular weight and not a foreign substance to the cow, antibodies to it are probably not produced.

### Conclusions

GnRH proved to be an effective treatment for ovarian cysts in dairy cattle. There were only four of 225 cows that remained cystic following one, two or three treatments. Most cows (89%) became pregnant following recovery from the cystic condition. GnRH appears equally as effective as HCG for treatment of ovarian cysts. GnRH may be the treatment of choice in those cases that require repeat treatments.