Available online at www.sciencedirect.com
SCIENCE DIRECT®
Theriogenology
Theriogenology 65 (2006) 1563–1574
www.journals.elsevierhealth.com/periodicals/the

Comparison of synchronization of ovulation with timed insemination and exogenous progesterone as therapeutic strategies for ovarian cysts in lactating dairy cows

M.B. Crane [a], J. Bartolome [a,1], P. Melendez [a], A. de Vries [b], C. Risco [a], L.F. Archbald [a,*]

[a] *Department of Large Animal Clinical Sciences, College of Veterinary Medicine, University of Florida, Gainesville, FL 32610, USA*
[b] *Department of Animal Sciences, University of Florida, Gainesville, FL 32610, USA*

Received 22 July 2005; accepted 6 September 2005

Abstract

The objective of this study was to compare the effectiveness of the Ovsynch and controlled internal drug releasing (CIDR) protocols under commercial conditions for the treatment of cystic ovarian disease in dairy cattle. A total of 401 lactating dairy cows with ovarian cysts were alternatively allocated to two treatment groups on the day of diagnosis. Cows in the Ovsynch group were treated with GnRH on Day 0, PGF2α on Day 7, GnRH on Day 9, with timed insemination 16–20 h later. Cows in the CIDR group were treated with a CIDR insert on Day 0 for 7 days; on Day 7, the CIDR was removed, and cows were treated with PGF2α. All cows in the CIDR group were observed for estrus and cows exhibiting estrus within 7 days following removal of the CIDR and PGF2α administration were inseminated. The outcomes of interest for this experiment were the likelihood to be inseminated, return to cyclicity (determined by a CL on Day 21), conception and pregnancy rates. Data for these variables were analyzed using logistic regression. The percentage of cows inseminated in the Ovsynch and CIDR groups were 82 and 44%, respectively. Cows in the Ovsynch group were 5.8 times more likely to be inseminated than cows in the CIDR group. Cows with a low BCS were 0.48 times less likely to be inseminated than cows with a high BCS. The percentage of cows with a CL

* Corresponding author. Tel.: +1 352 392 4700x5641; fax: +1 352 392 7551.
E-mail address: ArchbaldL@mail.vetmed.ufl.edu (L.F. Archbald).
[1] Present address: Facultad de Ciencias Veterinarias, Universidad Nacional de La Pampa, Gral Pico, La Pampa, Argentina.

0093-691X/$ – see front matter
doi:10.1016/j.theriogenology.2005.09.003

on Day 21 for the Ovsynch and CIDR groups was 83 and 79%, respectively ($P > 0.05$). Cows with a low BCS were 0.49 times less likely to have CL on Day 21 than cows with a high BCS. Conception and pregnancy rates for cows in the Ovsynch group were 18.3 and 14.4%, respectively. Conception and pregnancy rates for cows in the CIDR group were 23.1 and 9.5%, respectively. There was no significant differences between conception or pregnancy rates in cows in both groups. Primiparous cows were 2.6 times more likely to conceive than multiparous cows. In conclusion, the results of this study suggested that fertility was not different between cows with ovarian cysts treated with either the Ovsynch or the CIDR protocols in this dairy herd. In addition, primiparous cows had an increased likelihood for conception compared to multiparous cows, and cows with a low BCS were less likely to be inseminated or have a CL on Day 21, regardless of treatment.

Keywords: Cystic ovarian disease; Ovsynch; CIDR insert; Lactating dairy cow; Ovary

1. Introduction

Bovine ovarian cysts are follicles that fail to ovulate at the time of estrus [1]. This condition is costly because these cows are infertile as long as the condition persists [2]. The exact cause of ovarian cysts is not presently known, but it appears that an important component in the pathogenesis of this condition is the inappropriate release, or lack of release, of gonadotropin-releasing hormone (GnRH) at the time of estrus. In addition, it has been suggested that an underlying mechanism in the development of ovarian cysts involves a hypothalamic defect which causes follicular estrogen to be ineffective in inducing a GnRH/LH surge at the time of estrus [3], and that this hypothalamic defect could involve the estrogen receptor α (ERα). Further, it has been speculated that treatment with progesterone may induce the ERα in the mediobasal hypothalamus, which will foster a GnRH/LH surge in response to follicular estrogen [3].

Collectively, this suggests that therapeutic strategies for bovine ovarian cysts could involve either the use of GnRH or exogenous progesterone. In fact, several experimental protocols using these hormones have been shown to be effective in the treatment of bovine ovarian cysts. The Ovsynch protocol has also been shown to be effective in treating this condition [4]. However, this protocol is labor-intensive and time-consuming, since it involves handling of cows four times in a 10 days period. Until July 2003, the use of exogenous progesterone in lactating dairy cows in the USA was not a therapeutic option, due to the lack of FDA approval. Since then, a protocol using an intravaginal device containing progesterone (EAZI-BREED™ CIDR®) has been approved by the FDA for use in lactating dairy cows. This protocol is relatively simple, does not involve as much handling of cows, and is not as labor-intensive and time-consuming as the Ovsynch protocol. Therefore, it could be a more acceptable clinical approach for the treatment of ovarian cysts in the lactating dairy cow. However, there is no information available concerning the comparative efficacy of these two treatment strategies in a single, large dairy herd.

The hypothesis of this study was that lactating dairy cows with ovarian cysts treated with exogenous progesterone, a luteolytic dosage of PGF2α, and inseminated at an induced