

Proceedings of
10th Congress of Italian Society
of Animal Reproduction
(SIRA 2012)
1st Balkan Conference on
Biology and Reproduction in Farm Animals
and in Aquaculture

Tirana, Albania, 23-25 May, 2012

Edited by

Società Italiana Riproduzione Animale



c/o Department of Animal Production, University of Bari Aldo Moro

St. Prov. per Casamassima, km 3 70010 Valenzano (Ba), Italy

Phone: +390804679879; Fax: +390804679883

info@societaitalianariproduzioneanimale.it

<http://www.societaitalianariproduzioneanimale.it/>

Published by

Società Italiana Riproduzione Animale

ISBN: 978-88-907328-0-5

MANAGEMENT OF FUNCTIONAL OVARIAN DISORDERS IN HIGH YIELDING DAIRY COWS

Dovenski T¹, Trojancanec P¹, Petkov V¹, Atanasov¹, Kocoski Lj², Jasari B³, Paunkov I⁴

¹Ss. Cyril and Methodius University, Faculty of Veterinary Medicine, Institute of Reproduction; ²Faculty of Biotechnical Sciences, University St. Kliment Ohridski, Bitola; ³Ministry of Agriculture; ⁴Dairy farm "Stocarstvo" Bogdanci, R. Macedonia.

dovenski@fvm.ukim.edu.mk DOI: 10.4488/2012.SIRA.F.001

KEY WORDS: cow, ovary, dysfunction

ABSTRACT - Various health, nutrition and management issues can impact reproductive performance in dairy cattle and reduced fertility, observed in modern high yielding dairy cows nowadays. Functional ovarian disorders are recognized as an important reproductive pathology and can interfere seriously the production leading to significant economic losses on dairy farms. Managing regular ovarian cyclicity postpartum is demanding function in total farm management. The use of ultrasound diagnostics, as a clinical method for examination of reproductive organs, enables better understanding of the essence of these disorders. Ultrasonography offers opportunity to visualize cyclic ovarian structures and monitoring of the dynamic changes during regular estrous cycle, as well as during pathological conditions. Purpose of this article is to review recent scientific information about the most common forms of the functional ovarian disorders e.g. Cystic ovarian follicles, Static ovaries, Ovulatory defects, Luteal deficiency, True anoestrus, etc. In addition, the current scientific findings and experiences of Institute for Reproduction on the Faculty of Veterinary Medicine in Skopje, regarding adequate hormonal treatment of these diseases are discussed.

INTRODUCTION - Alarming trend of decreasing fertility in dairy cows has been reported recently by several researchers worldwide¹⁻³. There are numerous factors influencing this fertility, including milk production, poor herd health management, especially nutritional management, stress, metabolic disorders, as well as other diseases (infections, mastitis, lameness etc.) which have indirect impact on reproductive performance of dairy cows. The inadequate herd management results with a high percentage of infertility, has been considered as a main causes of functional infertility as follow: cystic ovarian disease (37.1%), suboestrus (20.9%), anoestrus (13.5%) and anovulation (5.6%)⁴.

In this article we will present review of articles published by our Institute, based on more than 20 years "on farm" experience in the field of reproduction management in dairy cows.

CYSTIC OVARIAN FOLLICLES - Several experiments conducted by Dovenski et al. (2002)⁵ have shown that the cysts could be classified according to the thickness of the wall as follows: luteal cyst with thickness of the wall ≥ 3 mm and appearance as gray echogenic layer of the inner wall; follicular cyst with thickness of the wall < 3 mm which shows uninterrupted anehogenic antrum, with a relatively smooth and thin wall with occasional presence of echogenic threads on the wall or in the antrum. Investigating fate of spontaneous generated ovarian cysts by ultrasound, we have found that ovarian cysts are dynamic structures and should not be considered always as a severe pathological condition. Single ovarian cysts have partial capability for spontaneous self-recovery in short period of time, probably undergoing to the process of luteinization. Multiple follicular cysts have tendency for persistency for more than three weeks, and in this cases hormonal therapy is recommended. Observing by ultrasound the fate of the ovarian cystic formations after application of

different concentrations of GnRH Atanasov et al. (2011)⁶, have concluded that independently of the GnRH dose, the cows responded individually presenting two pathways of reaction. First, ovulating or luteinization of one of the subordinated follicles and forming functional corpus luteum; and Second, increase of luteal tissue within the cyst and reduction of antrum space, leading to full luteinisation of the cyst.

STATIC OVARIES, OVULATORY DEFECTS - Norgestomet treatment has been successfully applied for resumption of reproductive function in postpartum non-cyclic dairy cows⁷ as well as low dose GnRH and eCG in the beginning of the transition feeding period¹⁰. Treatment with single dose of GnRH or eCG, in many cows with true postpartum anoestrus, caused resumption of follicular growth and ovulation (87% and 75%, respectively) in comparison to control 20%. However, eCG treatment resulted in a quicker response, but higher ovulation rate compared to GnRH treatment. Similar results for improvement of pregnancy rate after the β -Carotene treatment (51.7% vs 35.6%, treated and non-treated animals, respectively; (p<0.01), has been reported⁸.

Recent investigations have been shown that dietary fat is beneficial to the reproductive system in dairy cows. It has been shown that fatty acids composition is different in follicular fluid and blood serum in cows with static ovaries and cystic ovarian follicles and interferes with other reproductive failures⁹. Studying influence of negative energy balance (NEB) on reproductive performance of dairy cows during summer heat stress by measuring serum concentration of NEFA, BHB, glucose & triglycerides Dovenski et al. (2010)¹⁰ reported deteriorating effect on the reproductive efficiency of dairy cows by decreasing dry matter intake and consecutive negative energy balance.

REFERENCES - 1. Beam SW, Butler WR. Effects of energy balance on follicular development and first ovulation in post partum dairy cows. *J Reprod Fertil* 1999; 54 (Suppl);411-424. 2. Royal MD, Darwash AO, Flint APF, Webb R, Woolliams JA, Lamming, GE. Declining fertility in dairy cattle: changes in traditional and endocrine parameters of fertility. *Anim Sci* 2000, 70:487-501. 3. Mee J , Ross E and Dillon P. Is Irish dairy herd fertility declining? Proceedings of the 23rd World Buiatrics congress, Quebec, 2004; abstract 3431. 4. Arthur HG, Noakes DE, Pearson H: *Veterinary Reproduction and Obstetrics*, 6th ed., W.B. Saunders Co., Philadelphia. 1989.. 5. Dovenski T., Ivancev N., Trojancanec P., Kocoski Lj., Popovski K., Mickovski G. Veselinovic S., Ivancev A., Mirkovic D., Ickov R., Monitoring of ovarian responses in dairy cows with cysts by ultrasonography and plasma progesterone profile, *Reproduction in Domestic Animals*, 37, 4, (Abstr. P.1.33), (2002). 6. Atanasov B, Mickov L, Esmerov I, Trojancanec P, Dovenski T, *Ultrasound Observation of Ovarian Dynamic after Treatment of Postpartum Anoestrus Dairy Cows by GnRH and eCG* *Reproduction in Domestic Animals*, 46, 3, 87, (2011). 7. Dovenski T., Trojancanec P., Petkov V., Mickov Lj., Atanasov B., Paunkov I., Possibilities of ultrasound diagnostics for improvement of bovine reproductive performance, 19. FEMESPRUM Proceedings, 407-413, (2011). 8. Dovenski T., Trojancanec P., Kocoski Lj., Petkov V., Popovski K., Trojancanec S., Efficiency of Beta-Carotene for treatment of ovarian disorders in dairy cows, *Reproduction in Domestic Animals*, 42, 2, 116, (2007). 9. Dovenski T., Trojancanec P., Hajrulai Musliu Z., Atanasov B., Uzunov R., Jasari B., Dovenska M., Grizelj J., Comparison between fatty acid composition of follicular fluid and blood serum in dairy cows with ovarian disorders, *Proceeding of the 4th General Meeting of GEMINI - Maternal communication with Gametes and Embryo / Alireza Fazeli and Erique Gomez (ed) - GEMINI COST ACTION FA0702*, 99 (2011), 10. Dovenski T., Celeska I., Trojancanec P. , Atanasov B. , Ulcar I. , Jasari B. , Trojancanec S., Blood serum concentration of NEFA, BHB, glucose & triglycerides in dairy cows with different reproductive status during summer heat stress, , *Proceedings 14th*

International Conference on Production Diseases in Farm Animals (ICPD), Gent, Belgium
Abstr., (2010).