شبكة المعلومات الجامعية

بسم اللّه الرحمن الرحيم

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

نقسم باللّه العظيم أن المادة التي تم توثيقها وتسجيلها علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات

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بعض الوثائق الأصلية تالفة

شبكة المعلومات الجامعية

بالرسالة صفحات لم ترد بالأصل

Cairo University

Faculty of Veterinary Medicine

The use of Doppler Ultrasonography for evaluating the uterine and ovarian blood flow during the estrous cycle in Buffaloes

Thesis Presented by

Mohamed Fathy Sayed Hashem
(B.V.Sc, Cairo University,2017)

For the degree of Master
(Theriogenology)

Under supervision of

Dr. Khaled Hafez El-Shahat
Professor of Theriogenology
Faculty of Veterinary Medicine
Cairo University

Dr. Hany Mokhtar Eissa
Professor of Theriogenology
Faculty of Veterinary Medicine
Cairo University

Dr. Amal Mahmoud Abo El-Maaty
Professor of Reproductive Physiology
Animal Reproduction and AI Dept.,
Veterinary Division.
National Research Center

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Supervision sheet

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Cairo University
Faculty of Veterinary Medicine
Department of Theriogenology

Name : **Mohamed Fathy Sayed Hashem**
Nationality : **Egyptian**
Date of birth : ‹3/‹3/1994
Scientific degree : **M.V.Sc.**
Specification : **Theriogenology**
Title of thesis : **The use of Doppler Ultrasonography for evaluating the uterine and ovarian blood flow during the estrous cycle in Buffaloes**

Supervisors:

1-Dr. Khaled Hafez El-Shahat
Professor of Theriogenology, Faculty of Veterinary Medicine, Cairo University.

2-Dr. Hany Mokhtar Eissa
Professor of Theriogenology, Faculty of Veterinary Medicine, Cairo University.

3-Dr. Amal M. Abo El-Maaty
Professor of Reproductive Physiology, Animal Reproduction and AI Dept. Veterinary Division, National Research Center, Cairo.

Abstract

The present study aimed to use color and spectral Doppler ultrasound to study both follicular, luteal blood flow vascularization areas in addition to ovarian and uterine arteries Doppler indices in normal spontaneous ovulation and after induction of ovulation using either progesterone releasing intra-vaginal device (PRID - PGF2α) or PRID- Modified Co- synch (PRID + GnRH) were evaluated. Nitric oxide and ovarian hormones (progesterone and estrogen) were estimated in blood. Results of the non-induced ovulation showed that both days and phases of the estrous cycle influenced the follicular dynamic, the luteal dynamic, the ovarian and uterine hemodynamics. The highest number of medium and small follicles were found in the early and mid-luteal phase, respectively. However, the follicular phase contained a higher number of large follicles. The present study has demonstrated an important variation in the ovarian hemodynamic in buffaloes between the follicular and luteal phases of the estrous cycle. The follicular phase contained significantly higher follicle area/pixel, antrum area/ pixel, follicle antrum area/pixel, and follicle colored area/pixel than that in luteal one. No significant difference was existed between the blood flow of the dominant follicle and the second largest one. The vascularization of the dominant follicles tended to be higher on the day of estrus. The diameter of CL as well as their blood flow in the present study increased from day 2 of the cycle then gradually elevated to reach the peak at day 14 and decreased to reach a lower value at day 21. The ovarian and uterine blood flow indices (RI, P1, TAMV, S/D, BFV) throughout the estrous cycle did not change in the present study. However, the PSV of ipsilateral ovarian arteries was significantly higher ($P = 0.082$) than those obtained in the contralateral one. A similar finding was obtained in EDV. The levels of estrogen (E2) during the follicular phase were higher ($P < 0.041$) than that in the late luteal one. The reversed trend was observed for progesterone. The nitric oxide (NO) levels reached peak value on day 5 ($P = 0.002$) and achieved the lowest ($P = 0.031$) values during the mid-luteal phase. Plasma progesterone concentrations positively correlated with the diameter of CL ($r = 0.37$; $P = 0.01$), CL area/pixels ($r = 0.35$; $P = 0.009$) and CL color area/pixels ($r = 0.39$; $P = 0.001$) but negatively correlated with the diameter of dominant follicles and blood flow. In addition, E2 levels was strongly correlated with diameter of dominant follicles ($r=0.19$; $P=0.0001$), follicle area/pixel ($r = 0.18$; $P = 0.0001$) and negatively correlated the diameter of CL ($r = -0.062$), CL area/pixels ($r = -0.093$; $P = 0.09$). Results revealed that buffaloes treated with PRID - PGF2α had a higher total number of follicles and F1 dominant diameter. Color Doppler ultrasonography revealed that, F1 diameter, F1 area/pixel, F1 antrum area/pixel, F1 granulosa area, and F1 colored area/pixels significantly increased in PRID -PGF2α group as compared to normal spontaneous ovulating and PRID + GnRH group. In addition, the CL diameter and their vascularity (CL Area/pixels, CL Color area/pixels, CL Color area %) were markedly increased in the PRID -PGF2α group as compared to normal spontaneous ovulating and PRID + GnRH group concurrent with a high level of plasma estrogen. The higher values of resistance index (RI) of ipsilateral and contralateral ovarian arteries were recorded in PRID -PGF2α and PRID + GnRH as compared to the normal spontaneous ovulating. A similar tendency was observed in blood flow volume (BFV). However, the ovarian blood flow indices including time average mean velocity (TAMV) and peak systolic velocity PSV) did not change among different groups. A higher level of plasma estrogen was achieved in PRID -PGF2α as compared to other groups. However, the progesterone levels did not vary among groups. The nitric oxide level was significantly higher in PRID + GnRH as compared to others.

Keywords: Buffalo; follicular vascularization; luteal blood flow; spontaneous ovulation; synchronization.

Dedication

I dedicate this study to ***my parents, my brothers and my sister*** *for their, understanding, support and help to succeed. Thank you for every unconditional love and guidance.*

I dedicate this study to ***my wife*** *who inspired me to be strong despite many obstacles in life. Thank you for everything.*