Plant Archives Vol. 20 Supplement 1, 2020 pp. 840-842 **e-ISSN:2581-6063 (online), ISSN:0972-5210**

EFFECT OF GESTATIONAL PERIODS ON BLOOD PICTURE AND DIFFERENTIAL COUNT OF WBCs IN IRAQI BUFFALOES

S. M. AL-Sariy[1], A. H. Mohammad[2] and T. M. AL-Hamedawi[3]

[1]Department of Surgery and Obstetrics, College of Veterinary Medicine, AL-Qasim Green University, Iraq.
[2]AL-Musaib Technical Institute, AL-Forat AL-Awast University, Iraq.
[3]Department of Surgery and Obstetrics, College of Veterinary Medicine, University of Baghdad, Iraq.

Abstract

The present study was conducted on 15 local Iraqi buffaloes in AL-Thahab AL-Abiad village, Baghdad provenance during the period between May 2018 – June 2019, their age ranged from 4-7years. The animals diagnosed clinically by rectal palpation the eliminated that the animals were non-pregnant and not suffered from any reproductive problems and reproductive problems and they were taken blood samples (10 ml) from jugular vein in tube containing anticoagulant (EDTA) before inseminated animals and become pregnant, blood samples for blood picture and differential count of WBCs in non-pregnant Iraqi buffaloes (No = 15) and third trimesters after insemination and pregnancy, which include RBCs count, Hb, PCV, MCV, MCH and MCHC as well as differential count of WBCs by using spectrophotometric methods, Micoheamatocite in addition to Giemsa stain to evaluate the effect of pregnancy on blood parameters, the result showed significantly decrease ($P<0.05$) in blood picture and significantly increase in most differential count of WBCs that they indicated the effect of pregnancy on this parameters include (blood picture and differential count of WBCs).

In conclusions, there which study was to improvement the important evaluation of different WBCs blood picture and counts for effecting on pregnancy in Iraqi buffaloes.

Key words : Blood picture, buffaloes, RBCs, Neutrophils.

Introduction

Blood pictures are getting increase in recent studies in veterinary science as related of the nutrition, metabolic , physiologic and reproductive status of domestic animals (Abd Ellah *et al.*, 2014; Beechler *et al.*, 2009; Yaqub *et al.*, 2013). Reference evolutions from many indices become imperative as to diagnosis, preventing and controlling program of many disease or limitation the gestation period (Ellah *et al*., 2013; Patel *et al*., 2016; Paul *et al*., 2011) . they are many different factors include age, breed and physiological status effect on hematological analysis (Jacob, 2012; Kumar *et al*., 2001), while the pregnancy and lactation are the most important stages in the life of dairy animals that they effect on metabolism and the results recorded alteration of the hematological parameters (Fagiolo *et al*., 2004; Hussain *et al*., 2001; Patel *et al*., 2016). As well as the hematologic values represented the health status of the animal and can be used to help evaluate the health a herd (Hasanpour *et al*., 2008; Patil *et al*., 1992). The purpose of this study is to evaluate for complete blood count of clinically healthy local Iraqi buffaloes as well as to study the influence of different stages of pregnancy on different blood parameters of this animals.

Materials and Methods

The present study was conducted on 15 local Iraqi buffaloes in AL-Thahab AL-Abiad village/Baghdad provenance during the period between May 2018 – June 2019, their age ranged from 4-7years. The animals diagnosed clinically by rectal palpation the eliminated that the animals were non-pregnant and not suffered from any reproductive problems and reproductive problems and they were taken blood samples (10 ml) from jugular vein in tube containing anticoagulant (EDTA) before

inseminated animals and become pregnant.

Total RBCs count was determined by using hemocytometer according to Blaxhall and Daisley (1973) as well as hemoglobin (Hb) estimated by using spectrophotometric method, while PCV was measured by Micohematocrite, WBCs was achieved by using neubuar hematocytometer but the differential count by using Giema stain and there procedures was repeated on those animals along gestation period represented by three trimester (1st, 2nd and 3rd), 1st trimester include 1st, 2nd and 3rd months of pregnancy, 2nd trimester include 4th, 5th and 6th months and 7th month to parturated animals was represented the third trimester. Analysis of data were performed and one way ANOVA and least significant difference post hoc test were used according to Steel and Torrie (1980).

Results

The results revealed in table 1 recorded superior significantly ($P<0.05$) related with non- pregnant buffaloes and 1st trimester compared with 2nd and 3rd trimester of pregnancy, which include RBCS Count, Hb, PCV, MCV and MCHC, but recorded non-significantly ($P<0.05$) in MCH in different groups.

While the result in table 2 were recorded significantly ($P<0.05$) in WBCs count in 2nd and 3rd trimester of pregnancy compared with non-pregnant and 1st trimester, but the percentage of lymphocyte was recorded significantly ($P<0.05$) in 1st and 2nd compared with non-pregnant and 3rd trimester, as well as the percentage of monocyte was recorded significantly ($P<0.05$) in non-pregnant group and 3rd trimester of pregnancy compared with 1st and 2nd groups and there is significant difference ($P<0.05$) in 1st group of pregnancy compared with 2nd group, but the percentage of neutrophil were recorded significantly ($P<0.05$) in 2nd and 3rd groups compared with non-pregnant group and 1st group, while the percentage of eosinophil's was recorded significantly ($P<0.05$) in non-pregnant groups and 1st group compared with 2nd and 3rd groups and same time recorded significantly ($P<0.05$) in 2nd group compared with 3rd grpup, as well as the results recorded the percentage of basophils there is significantly ($P<0.05$) in non-pregnant and 3rd groups compared with 2nd and 3rd groups.

Discussion

In pregnant Iraqi buffaloes the blood picture observed in table 1 that they recorded significantly differences ($P<0.05$) related with RBCs, Hb, PCV, MCV, MCH and MCHC in non-pregnant and first trimesters of pregnancy compared with second and third trimesters of gestation period and this findings agree with Ciaramella *et al*.

Table 1 : Blood picture in non-pregnant and in different stages pregnant Iraqi buffaloes.

Blood parameters	Non-pregnant buffaloes M±SD	First trimester of pregnancy M±SD	Second trimester of pregnancy M±SD	Third trimester of pregnancy M±SD
RBCs ($x10^6/\mu l$)	7.9±2.1a	7.6±1.8 a	6.8±1.3 b	6.3±0.8 b
Hb(g/dl)	11.6±1.7 a	11.3±1.5 a	10.4±1.02 b	9.8±0.9 b
PCV(%)	36.4±3.8 a	34.5±3.2 a	29.6±2.7 b	27.8±2.3 b
MCV (μm^3)	46.4±11.4 a	45.3±10.8 a	43.5±9.2 b	42.4±8.7 b
MCHC(%)	31.2±1.8 a	30.6±1.5 a	28.4±0.9 b	28.8±0.8 b
MCH(pg)	14.6±3.6 a	15.2±3.1 a	15.3±2.8 a	15.5±2.9 a

Different small letters mean in the same row significantly different ($P<0.05$)

Table 2 : Differential count of WBCs in non-pregnant and pregnant Iraqi buffaloes in different stages.

WBCs types	Non-pregnant buffaloes M±SD	First trimester of pregnancy M±SD	Second trimester of pregnancy M±SD	Third trimester of pregnancy M±SD
WBCs ($x10^3/\mu l$)	9.6±3.4 b	10.2±3.6 b	10.8±3.4 a	11.2±3.8 a
Lymphocyte (%)	51.2±7.80 b	53.3±7.92 a	55.2±8.62 a	49.4±7.58 b
Monocyte (%)	4.7±2.03 a	3.6±1.84 b	2.4±1.34 c	4.8±2.14 a
Neutrophils (%)	37.2±9.36 b	38.1±8.32 b	40.2±8.72 a	42.3±8.79 a
eosinophil's (%)	5.6±2.47 a	4.5±2.12 a	3.7±1.78 b	2.2±1.04 c
Basophils (%)	1.3±0.56 a	0.5±0.13 b	0.5±0.11 b	1.3±0.32 a

∗ Different small letters mean in the same row significantly different ($P<0.05$).

(2005), Ellah *et al*. (2013) and they believed that the fetus caused stress on dam and need to blood supply to the uterus for increased nutrition , while the MCH recorded non significantly ($P<0.05$) in all stages of pregnancy and non-pregnant animal, but the differential count of WBCs was recorded significantly differences ($P<0.05$) in number of WBCs and neutrophils in 2nd and 3rd trimesters compared with non-pregnant and 1st trimester of pregnancy (Ellah *et al*., 2013; Lal Vegad, 2000) as well as monocytes and basophils recorded superior significant ($P<0.05$) in third trimester compared with other trimesters and non-pregnant and these finding agreement with (Ciaramella *et al*., 2005; Ellah *et al*., 2013).

Conclusion

The blood picture and differential count of WBCs play an important and improvement method to eliminate the effect of pregnancy in Iraqi buffaloes.

References

Abd Ellah, M. R., M. I. Hamed, D. R. Ibrahim and H. Z. Rateb (2014). Serum biochemical and haematological reference intervals for water buffalo (*Bubalus bubalis*) heifers. *Journal of the South African Veterinary Association*, **85** :01-07.

Beechler, B., A. Jolles and V. Ezenwa (2009). Evaluation of hematologic values in free-ranging African buffalo (*Syncerus caffer*). *Journal of Wildlife Diseases*, **45** : 57-66.

Blaxhall, P. and K. Daisley (1973). Routine haematological methods for use with fish blood. *Journal of Fish Biology*, **5** : 771-781.

Ciaramella, P., M. Corona, R. Ambrosio, F. Consalvo and A. Persechino (2005). Haematological profile on non-lactating Mediterranean buffaloes (*Bubalus bubalis*) ranging in age from 24 months to 14 years. *Research in Veterinary Science*, **79** : 77-80.

Ellah, M. A., M. I. Hamed, D. Ibrahim and H. Rateb (2013). Reference values for hematological and serum biochemical constituents in late pregnant buffaloes. *Assiut Vet. Med. J*., **59** : 35-46.

Fagiolo, A., O. Lai, L. Alfieri, A. Nardon and R. Cavallina (2004). Environmental factors and different managements that influence metabolic, endocrine and immuno responses in water buffalo during lactation, In: *Proc. Seventh World Buffalo Congress*, Manila, Philippines, pp. 24-26.

Hasanpour, A., G. Moghaddam and A. Nematollahi (2008). Biochemical, hematological, and electrocardiographic changes in buffaloes naturally infected with Theileria annulata. *The Korean Journal of Parasitology*, **46** : 223.

Hussain, S., M. A. Saeed and I. N. Bashir (2001). Serum electrolytes in buffaloes during late pregnancy, parturition and post partum periods. *Pakistan Veterinary Journal*, **21** : 175-179.

Jacob, N. (2012). Haematological, biochemical and endocrine parameters at different ages and physiological stages in Gir cattle and Jaffarabadi buffaloes, AAU, Anand.

Kumar, R., I. Sharma, M. Rao and M. Quadri (2001). Status of haemogram, plasma proteins, minerals and electrolytes during pregnancy, anorexia and sub-clinical ketosis in cows and buffaloes. *The Indian Journal of Animal Sciences*, **71**.

Lal Vegad, J. (2000). Normal blood values of the Water Buffalo (*Bubalus bubalis*). *Schalm's Veterinary Hematology*, **5** : 1085-1088.

Patel, M. D., A. Lateef, H. Das, A. S. Patel, A. G. Patel and A. B. Joshi (2016). Effect of age, sex and physiological stages on hematological indices of Banni buffalo (*Bubalus bubalis*). *Veterinary World*, **9** : 38.

Patil, M., B. Talvelkar, V. Joshi and B. Deshmukh (1992). *Hematological studies in murrah buffalos*. Indian Veterinary ASSN 7 Chamlers Road, Nandanam, Madras 600 0, India pp. 661-663.

Paul, R., G. Gottam and S. Pareek (2011). Effect of lactation and pregnancy on serum biochemical and haematological profiles of Surti buffaloes. *Vet. Pract.*, **12** : 94-96.

Steel, R. G. and J. H. Torrie (1980). *Principles and procedures of statistics : a biometrical approach*. McGraw-Hill Kogakusha, Ltd.

Yaqub, L., M. Kawu and J. Ayo (2013). Influence of reproductive cycle, sex, age and season on haematologic parameters in domestic animals : a review. *Journal of Cell and Animal Biology*, **7** : 37-43.