

CLINICAL AND SEROLOGICAL STUDY OF SOME CAUSES OF ABORTION IN IRAQI BUFFALOES

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ABSTRACT

This investigation was performed in two areas, west and north west Baghdad (White gold village and shulla District). The study was included 322 buffalos within 206 were pregnant, some 32 were aborted and rated 9.93% of the total 15.5%. Thirty two blood samples were collected from 22 aborted buffalo, 5 pregnant buffalos, 3 buffalo heifers and 2 buffalo calf. All animals were selected from herds with repeated abortion history. The obtained results revealed a significant effects ($p < 0.01$) for the following factors: season, age of aborted buffalo, gestation period, body condition measurement for aborted animals. The serological tests revealed 9 positive cases for brucellosis as indicated by rose Bengal test (RBT). This was confirmed with indirect enzyme linked Immunosorbent Assays (I. ELISA). The obtained results confirmed that brucellosis was 28.13% of the tested animals

INTRODUCTION

Abortion causes serious economic losses and is considered one of the major problems facing buffalo herds owners (4). The losses are represented by the decrease in milk production with deterioration in its quality and fetal mortality (9,22). Moreover abortion result in many reproductive problems like retained fetal membranes and uterine infection which leads to lower future fertility and may result in culling of the dam, from the herd. Causes of abortion are either infectious or non-infectious (11). The objective of this study was to investigate some causes of Abortion in buffalo in the west and north west of Baghdad using clinical and serological tests.

MATERIALS AND METHODS

Animals

The present study was conducted on herds consisted of 322 buffalo cows including 206 pregnant buffaloes. Animals of the study were 32(22 aborted buffalo cows 5 non-aborted buffalos cows 3 buffalo heifers and male buffaloes). The non-aborted animals and the 2 buffalo males were selected from the herds with history of abortion.

Nutrition

The animals were on good and heavy level of nutrition. Composed of green fodders, concentrates made of wheat bran, cotton seed cake, palm dates. Together with either barley or wheat straw. Watering of the animals and douching were sufficient and regular.

Laboratory techniques

Collection of blood samples and serum preparation

Blood samples were taken from the jugular or milk vein by sterile vacutainer tubes without anticoagulant, samples kept in ice box and transported to the laboratories of the state company of veterinary office in Al-Shiek Umar. The samples were centrifuged 3000 rpm** (Rotation per minute) for 5 minutes and sera were kept in deep freeze (-20°C) until serological test carried out.

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A-Rose Bengal test (RBT)

The test was performed according to the instructions of the Gokhan Company, Turkey which supplied the material of the test.

B-Indirect-Enzyme Immunosorbent Assays(I-ELISA)

The test was performed according to the instructions of Svanova Biotech AB., Company Sweden, which supplied the material of the test .

Body condition score(BCS):

The animals used in the study were scored according to the scale ranging From 1-5, according to(WBBCIP)(Water Buffaloes Beef Cattle Improvement Project).

Case history

Collected data of the history of aborted animals, depended on the clinical examination and information given by the owners.

Clinical examination

The general health status, appetite, reproductive signs such as presence of fresh discharge on the vulva, perineum, or tail were monitored. Rectal palpation of the genitalia were performed to each buffalo cow included in the study.

Statistical Analysis

The Chi-square test according to contingency tablets method within the SAS,2000 program was used to study the effect of different factors in traits(compare between percentage) (21).

Result and Discussion

The results of the present study revealed that percentage of aborted animals were 9.93 and 15.5 percent in relation to total number buffalo cows, and pregnant animals respectively as seen in Tab.1.

Table 1: Percentage of abortion in relation with total number of animals and pregnant animals

Total No. of abortion	Total No. of animals % of abortion	Total No. of pregnant % of abortion
32	322 9.93	206 15.5

The result is similar to data recorded by Juma and Baghdsar (13). That could be related to non infectious causes such as physical and thermal stress (6, 20, 23) as well as infectious causes such as bacterial, parasitic, viral, mycotic (1, 2, 3, 8, 10, 24).

The influence of summer season on the percentage of abortion were highly significant($p<0.01$)as shown in Tab.2.

Table 2: Influence of Seasons on percentage of abortion

Season	Abortion	
	No.	%
Winter (12, 1, 2)	1	4.5
Spring (3, 4, 5)	8*	36.3
Summer (6, 7, 8)	13	59.09**
Autumn (9, 10, 11)	----	----
Total	22	100
Chi Square (X^2)	----	12.73**

* One case of twin abortion, ** $P < 0.01$.

Similar results obtained in Iraq by Muhammad(16), he recorded a high percentage of abortion during summer, especially in August and July due to increase in ambient temperature. The effect of high ambient temperature leads to elevation in body temperature of pregnant animals which result in a decrease in blood supply to the uterus due to the dilation of superficial blood vessels which result in elevation of uterine temperature and shortage of oxygen and nutrients provided by the mother, these changes leads to death of the fetus followed by abortion, (19).

A high significance ($p < 0.01$) in the percentage of abortion within animal age 6-9 and 3-5 year were recorded Tab.(3). That could be related to the increase exposure of the animals to the pathological bacteria and consequently they contract the disease (7).

A high significance ($p < 0.01$) were recorded in the score 3 and 4 of the body condition scoring buffalo cows Tab.(4). In these animals the abortion did not occur due to infectious and non- infectious causes, meanwhile, fertility and pregnancy rates were higher in animals with BCS 3 and 4, (5). for this reason large number of pregnant and consequently aborted animals were within these body condition scores due to good plain of nutrition at the field of study.

Table 3: The influence of age of aborted animals on the percentage of abortion

Age of aborted animal (year)	Abortions	
	No.	%
<3	1	4.5
3-5	9	40.9
6-9	10*	45.5**
>9	2	9.1
Total	22	100
Chi Square (X^2)	----	10.669**

*One case of twin aborted, ** $P < 0.01$.

Table 4: Relationship between percentage of abortion and body condition score (BCS)

BCS	Abortions	
	No.	%
1	----	----
2	1	4.5
3	11	50**
4	10*	45.5
5	----	----
Total	22	100
Chi Square (X^2)	----	11.037**

One case of twin abortion, ** $P < 0.01$.

The relationship of abortion percentage and months of gestation Tab.5. was highly significant($p<0.01$) at 3-6 and >7 months of gestation. In this regard wide scope of infectious causes of abortion in buffalo such as campylobacteriosis, leptospirosis and brucellosis were recorded to cause abortion within that period (3, 14, 15) Meanwhile, thermal and physical factors as non-infectious causes may also leads to abortion within intervals of gestation (12, 19, 20). Further investigation will be required to study various causes of abortion in buffaloes.

Table 5: The relationship between months of gestation and percentage of abortion

Gestation (Months)	Abortions	
	No.	%
<3	1	4.6
3-6	9	40.9
>7	12	54.5*
Total	22	100
Chi Square (X^2)	----	12.34*

* $P<0.01$

Serum of tested buffaloes by RBT and I-ELISA were highly significant ($p<0.01$) for detection of positive results and their percent in samples tested Tab.(6).

This finding can be explained according to the fact that I-ELISA is sensitive to Brucella antibodies (7), and it may possess a high accuracy when a special monoclonal antibodies were used, (17) also the ELISA test possess 100% sensitivity and 99.7% specificity to Brucella antibodies (18). The results indicated that only 28.13% of abortion causes occurred were due to brucellosis. Meanwhile other causes of abortion might occur due to other infectious and non-infectious causes, RBT and I-ELISA are considered highly sensitive in the diagnosis of Brucella and further studies are required for the diagnosis of different causative agents of abortion in buffaloes and their prevalence in Iraq.

Table 6: The percentage of positive sample to RBT and I-ELISA

Test	Total No. of tested samples	No. of positive Results	No. of negative Results%	Total
Rose Bengal test (RBT)	32	9 28.13	23 71.87	32 100
I-ELISA	9*	9 100	----	9 100
Chi Square (X^2)	----	----	----	14.98**

The samples submitted to I-ELISA was the same (+) samples to RBT, ** $p<0.01$.

REFERENCES

- 1- Alton, G.G and J.R. L. Forsyth (1996). Medical microbiology.4thed.New York,Charchill Livingstone.
- 2- Baldi, L.A.; N. Pazzanese; L. Mizzone; V. Casupola; G. Sorice and R. Rmano (1997). Chlamydiosis in buffaloes Campania, Italy (Preliminary findings). Proc. Fifth World Buffalo Congress, 13-16 Oct, Caserta, Italy:L 696.
- 3- Blood,D.C.;D.M. Radostite and J.A. Hendrson (1979). Veterinary medicine.A text book of the diseases of cattle, sheep, pigs. goat and horses. 5th ed. Bailliere Tindell-London.

- 4- Boschioli, F.; M.V. Fouhongne and D.O. Callighan (2001). Brucellosis a worldwide zoonosis. *Curr. Opin Microbial.*, 4:58-64 pub. med
- 5- Campanile, G.; G. Neglia; C. Grassi; B. Gassparini; R. Dipalo and G. Zicarelli (2005). Influence of body condition score, blood ammonia and serum urea on conception rate in Italian Mediterranean buffaloes, *Ital. J. Anim. Sci.*, 4(2): 313-315.
- 6- Dawson, F.L. M. (1968). The normal bovine uterus Physiology, Histology and Bacteriology, *Vet. Rev. and Annotation*, 5:73-89.
- 7- Dhand, N.K.; S. Gumber; B.B. Singh; B. M. S. Aradhana; H. Kumar; D. R. Sharma; J. Singh and S. Sandhuk (2004). A study on the epidemiology of Brucellosis in Punjab (India) using survey Toolbox. *Rev. Sci. Tech. Int. Epiz.*, 24(3):879-885.
- 8- Eaglesom, M.D.; M.M. Garcia (1992). Microbial agent associated with bovine genital tract infections and semen.
- 9- Forar, A. L.; J. M. Gay and D. D. Hancock(1994). The frequency of endemic fetal loss in dairy cattle. A review theriogenology. 43: 989-1000.
- 10- Galiero, G. (2004). Sanitary risk of Artificial insemination and Embryo transfer in buffaloes. *Proc. Contributed papers volume II 7th World buffalo Congress*.
- 11- Hafez, B and Hafez, E.S.E. (2000). *Reproduction in farm animals 7th (ed)*. Fetal mortality, page 269
- 12- Hansen, P.J.; W.W. Thatcher and A.D. Ealy (1992). Methods for reducing effects of heat stress on pregnancy. In: Vanhorn, H.; W Wilcox, C.J.(eds), large dairy herd management. American dairy Science Association, Champaign, I. L.; 116-12. 125.
- 13- Juma, K.H. and G.A. Baghdsar (1995). A note on calf losses in Iraqi buffaloes. *Buffalo Bulletin*, 13:8689.
- 14- Kirkbride, C.A. (1985). Managing an outbreak of livestock abortion to the diagnosis and control of bovine abortion. *Vet. Med. Food Animal Practical Cattle*, 70-79.
- 15- Langoni, H.; C. Delfava; K.G. Cabral; A.V. Dasilva and S.A.P. Chagas (1997). Epidemiological survey on antileptospira agglutinins on buffaloes from vale do Ribeira, Saopaulo state (Brazil). *Proc. Fifth World Buffalo Congress*, 13-16 October Caserta, Italy: 622-625.
- 16- Mohammad, A.A. (2000). Clinical and bacteriological study of abortion cases in some dairy cows in Iraq, A thesis of master Sci. Vet. Med. College- Baghdad Univ.
- 17- Nielsen, K. (2002). Diagnosis of brucellosis by serology. *Vet. Microbial.*, 90, 447-459.
- 18- Radostitis, O.M. Gay; C.C. Blood; D.C. and K.W. Hinchcliff (2000). Infectious bovine rhinotracheitis: in veterinary medicine, A text book of the diseases of cattle, sheep, pigs, goats and horses' 9th Edit. W.B. Saunders company LTD. London, Network, Philadelphia, San Francisco st. Louis, Sydney.
- 19- Roman, P.H.; W.W. Thatcher; D. Caton; D. H. Barron and C.J. Wilcox (1978). Thermos stress effects on uterine blood flow in dairy cows. *J. Ani. Sci.*, 46:175-181.
- 20- Shnider, S.M.; R.B. Wright; G. Levinson; M.F. Roizen; K.L. Willis; S.H. Rolben and J. B. Craft (1979). Text book of Anesthesiology, (50): 524.

- 21- Steel, R.G. and J.H. Torrie (1990). Principles and procedures of statistics. 2nd d.Mc graw-Hill Book Company, New York.
- 22- Thurmond, M.C. and J.P. Picanso (1993). Fetal loss associated with palpation per-rectum to diagnos pregnancy in cows. J. American Vet. Medical. Association. 203: 432-435.
- 23- Vanderplasse, M. (1982). Reproductive efficiency in cattle: A guidline for projects in developing countries. FAO. Animal production and animal health, pp..25.
- 24- Zhao, C.O.; J.L. Wang; Z.X. LU and Y. Cai (1987). Study of abortion in dairy cows caused by Zearalenone. Chinese Journal of Veterinary Science and Tecnology, 5:3-5 (cited in vet.Bull, 1988)58 : abstract 2649.

دراسة سريرييه و سيروولوجية لبعض مسببات الإجهاض في الجاموس العراقي

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الملخص

أجريت هذه الدراسة في منطقتين، غرب وشمال غرب بغداد (قرية الذهب الابيض ومنطقه الشعلة). شملت الدراسة 322 جاموسة، كان عدد الحوامل 206 جاموسة أجهضت منها 32 جاموسة و بنسبة 9.93 من العدد الكلي 15.5% من الحوامل. تم جمع 32 نموذج دم من 22 جاموسة مجهضة و 5 جاموسة غير مجهضة، 3 اباكير جاموس مع 2 من ذكور الجاموس. جميع الحيوانات اختيرت من قطعان يتكرر فيها الاجهاض. اشارت النتائج الى وجود تأثير معنوي ($p < 0.01$) للعوامل التالية، الموسم، عمر الجاموسة اجهضه، فتره الحمل وقياس حاله الجسم للحيوان اجهض على نسبة الاجهاض. اظهرت نتائج الدراسة السيروولوجيه 9 حالات موجه لمرض الاجهاض الساري بفحص ورديه البنغال، و اكدت باستخدام فحص الاليزا الغير مباشر. اكدت النتائج ان نسبة حالات الاصابه بمرض الاجهاض الساري كانت 28.13% من حيوانات الدراسة.

جزء من رسالة دبلوم عالي للباحث الأول.

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