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A Clinical Study, Hematological and Therapeutic Protocols of Septic Metritis in Local Iraqi Cows (Janoubi)

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Abstract | This study was conducted on 36 Iraqi local cows (Janoubi) and 24 of them suffering from septic metritis in the large station of cows in Baghdad province (AL-Wahda) during the period from (Jan /2017 - Jun /2017), ages from (3- 6) these cows were divided into three equal groups according to the type of treatment used, The first treated group was treated with 75mg PGF2α intramuscular injection single dose and 20 ml of Penicillin-Streptomycin intramuscular injection one dose (20000 IU / kg penicillin and 5mg / kg streptomycin).The second treated group was treated with the same dose of PGF2α in addition to 20 ml of the Oxytetracycline 20% intramuscular injection single dose. The third group is the control group (without septic metritis).The results revealed that the differences in the responded animals and pregnancy rates were not significant among groups. On the other hand, the differences were significant (P<0.01) in the means of the number of insemination per conception as the first and second groups recorded high estimations as compared with control. The differences in the days open were also significant (P<0.05) as the second group showed the highest estimation compared with first and control group. With regard to blood pictures before treatment, the first and second groups showed significant lower (p <0.01) in the means of the RBC, Hb, and PCV compared with control group.The results of after treatment showed that difference between first group and control were not significant for each of RBC, PCV. The finding of this study is to used PGF2α with penicillin-streptomycin showed an effective influence in the treatment of septic metritis as compared with its effect when used with Oxytetracycline in the local Iraqi cow and the blood pictures was recorded an increasing in the RBC, Hb, and PCV as compared with the corresponding means before treatment.

Keywords | Hematological, Therapeutical, Septic metritis, Cow, PGF2α, Pen-strep.

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INTRODUCTION

Cattle are raised as livestock for meat, as dairy animals for milk and other dairy products (Bollongino et al., 2012). Septic metritis is one of the reproductive problems and one of the complications related to parturition (Magnus and Lali, 2009). Occurs after (1-14) days from birth and it is mostly after trapping the placenta (Susan, 1998). The most common cause of uterine infection is the pathogenic microorganisms affecting productivity and fertility of cows (Bondurant, 1999). Often is associated with uterine infections (Sheldon and Dobson, 2004). It stopped ovarian activity and is characterized by symptoms of systemic as well as important as the high temperature Largely complete and loss of appetite, and result in a rapid drop in weight as it appears on public intoxication, which is one of the important clinical signs and confirmed the presence of septic inflammation of the uterine disease, often leading to the death of the animal (Roberts, 1986). Systemic antibiotic therapy appears to offer many advantages. Withdrawal times are generally well-established, distribution of all layers of the uterus is possible, and systemic antibiotic use appears to be less harmful to the uterine environment (Smith and Risco, 2002).

Table 1: The type of treatment, responded animals, number of services per conception, pregnancy rates and days open in Iraqi local cows (Janoubi)

Group	No animals	Responded animal No %		Pregnancy rates No%	M±SE No Services per conception	M±SE Days open
G1	12	10 (83.3%)		8 (75%)	3.01 ± 0.12a	113.56±8.34a
G2	12	8 (75%)		7 (58.3%)	3.95 ± 0.32a	135.14±10.87b
G3	12	12 (100%)		10 (83.3%)	1.45 ± 0.16b	105.07±6.42a
Chi squareValue		4.08	Chi square Value	1.83		
P		0.09	P	0.39		

G1: treated with PGF2α75mg/cow (3ml I.M)+20000 I.U P.P/kg 5mg/kg strep I.M
G2: treated with PGF2α 75mg/cow (3ml I.M)+ Oxytetracycline 20% 4gm/20ml
G3: Without septic metritis (control group)
Different letters mean significant differences (P<0.01).

Table 2: The blood picture before treatment in local Iraqi cows (Janoubi).

Blood parameters	Group 1	Group 2	Control
RBCs ×106 ml	5.82 ± 1.12 a	4.96 ± 0.62 a	6.47 ± 0.25 b
Hb (g/100ml)	8.84± 0.26 a	9.32 ± 0.17 a	10.87 ± 0.36 b
PCV %	26.32 ± 0.53 a	25.78± 0.23a	28.91 ± 0.21 b
MCV (fl)	45.22± 0.47 a	51.97± 0.37 b	44.68 ± 0.84 a
MCH (pg)	15.18 ± 0.23 a	18.79±0.27b	16.80 ± 1.4 a
MCHC (g/100ml)	33.58± 0.49 a	36.15± 0.73b	37.59 ± 1.19 b
WBCs ×103 ml	9.46 ± 0.94 a	9.67±1.03 a	8.72 ± 0.42 b

Means with a different letters in the same row significantly different (P<0.01).

Table 3: The blood picture after treatment of local Iraqi cows (Janoubi).

Blood parameters	Group 1	Group 2	Control
RBCs ×106 ml	6.82 ± 0.17 a	5.86 ± 0.24 b	6.52 ± 0.19 a
Hb (g/100ml)	9.94 ± 0.32 a	10.12 ± 0.22 a	11.20 ± 0.28 b
PCV %	27.93 ± 0.42 a	28. 14 ± 0.16 a	28.94 ± 0.17 a
MCV (fl)	40.95 ± 2.47 a	48.02 ± 0.66 b	44.38 ± 0.89 c
MCH (pg)	14.57 ± 1.88 a	17.26 ± 0.91 b	17.17 ± 1.47 b
MCHC (g/100ml)	35.58 ± 0.76 a	35.96 ± 1.37 a	38.70 ± 1.64 b
WBCs ×103 ml	7.42 ± 1.33 a	7.96 ± 0.72 a	8.67 ± 0.53 b

Means with a different letters in the same row significantly different (P<0.01).

Penicillin is the preferred antibiotic for postpartum metritis as it penetrates all layers of the uterus, is inexpensive (Smith and Risco, 2002), and most of the bacteria penetrating the endometrium and causing septicemia are sensitive to penicillin (Smith and Risco, 2002). Oxytetracycline is also commonly used (Bretzlaff et al., 1983). Hormone therapy is used to increase expulsive uterotonic (Smith and Risco, 2002). PGF2α using for stimulation of uterine contraction, which expulsions uterine discharge and debris (Frank et al., 1983; Bhattacharyya and Fazili, 2007; Smith, 2009). PGF2α increase vascularity ratio of a uterus and that means a high ratio of W.B.C in the uterus (Hopkins, 1983).

This study has identified to check the role of hormonal and antibiotic treatment on the number of services per conception, pregnancy rates, days open and hematological local Iraqi cows (Janoubi) Baghdad province (AL-Wahda) with septic metritis.

MATERIALS AND METHODS

This study was conducted on 36 local Iraqi cows (Janoubi) and 24 of them suffering from septic metritis in the large station of cows in Baghdad province (AL-Wahda), the study lasted from January 2017 to June 2017. The age ranged from 3-6 years.The cows were diagnosed clinically by rectal palpation and clinical signs.These cows divided randomly into three equal groups (12 cows) according to the type of treatment used.

The first treated group injected with PGF2α 75mg/animal (3ml) (Chaina) intramuscular injection single dose and 20 ml of Penicillin-Streptomycin intramuscular injection one dose (20000 IU/kg penicillin - 5mg /kg streptomycin) (Chaina), second treated group was treated with the same dose of PGF2α in addition to 20 ml of the Oxytetracycline 20% (Chaina) intramuscular injection single dose. The third group was the control group. Blood samples (5ml) were taken from the jugular vein in tubes containing anticoagulant (EDTA) before and after treatment. The total RBCs count was determined, Hemoglobin was estimated by using a spectrophotometric method, PCV was achieved by Microhaematocrit, WBC was counted using Improved Neubauer haemocytometer, according to Jain, (2000). The number of responsive cows, insemination per conception and days open were recorded. The statistical analysis includes means, standard deviation and proportions. The differences among means were assessed by the post hoc least significant differences while the proportions were assessed by Chi-square by using SAS program.

RESULTS

The results showed in Table 1 revealed that the responder animal and days open were significantly (P<0.01) low in control group compared with the first and second treated group. The first treated group recorded significantly (P<0.01) high proportion (10/83) than second treated group but the number of services/conception recorded significantly (P<0.01) lower than the second treated group while the pregnancy rate was significantly (P<0.01) higher for the first treated group (75%) as compared with the second group.

The outcomes recorded for after treatment in Table 2 showed that the first treated group recorded a significant (P<0.01) decreasing in the RBC, Hb, PCV, and MCHC compared with the contol group and a significant (P<0.01) increasing in the WBC compared with a control group. These results were in agreement with Hopkins, (1983).

The results illustrated in Table 3 showed that the first treated group recorded a significant (P<0.01) increasing in RBC, MCV, MCH,than the second treated group. This outcomecould be attributed to be the role of PGF2α as a stimulation of uterine contraction (Frank et al., 1983; Bhattacharyya and Fazili, 2007; Smith, 2009) and increases vascularity ratio of the uterus and that means a high ratio of R.B.C inter in the uterus HHopkins, (1983).

DISCUSSION

Metritis has a negative effect on the reproductive performance (Kasimanickama et al., 2004). The treatment of cows with metritis by antibiotices could lead to enhance the productive parameters because the Penicillin-Streptomycin treatment penetrates all layers of the uterus and act to eliminate the most of the bacteria as they are sensitive to penicillin (Smith and Risco, 2002).The changes in the hematological parameters of cows with metritis could be attributed to the inflammatory cytokines which were produced in cow with metritis. The cytokines play an important role in the modulation of local and systemic inflammatory responses (Henderson and Wilson, 1996). The enhance of the hematological parameters in this study confirm the results obtained by Heidarpour et al. (2014) who found that the hematological parameters of cows with metritis are improved after treatment.

PGF2α causing uterine contraction and this lead to expulsions of discharge and debris these findings were an agreement with several studies (Frank et al., 1983; Bhattacharyya and Fazili, 2007; Smith, 2009).

CONFLICT OF INTEREST

The authors have not any conflict of interests.

AUTHORS CONTRIBUTION

All authors participated and did research work as study protocol.

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