

Different Endometritis Treatments in Ewe: Comparative Study

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Abstract: The aim of this study is to find the best method of treatment of endometritis in ewe. The study was conducted in goat station at Agurgof and other region in Baghdad from 2009-2013 and was performed on 28 awassi ewes aged (2-4 years old) that diagnosed clinically as cases of endometritis. The animals were divided randomly into four groups each group consisting of 7 ewes. The first group was treated with oestradiol benzoate 1mg intramuscularly (IM) and 2gm of oxytetracycline 20% as intrauterine therapy; the second group was received oestradiol benzoate 1mg IM and 20ml of lugol's iodine solution intrauterinarily (IU). The third group was given oestradiol benzoate 1mg IM and 1 tube of cefapirin IU, while the fourth group was treated with 2gm oxytetracycline 20% IM and oestradiol benzoate 1mg IM. The results showed that the number of ewes responded were (57.14, 100, 85.71 and 42.85) % respectively. The second and third groups showed the significant differences rather than first and fourth groups regarding to open days length. From these results, we concluded that oestradiol benzoate has vital role in the treatment of endometritis and its synergetic effect with lugol's iodine solution gives the best result.

Keywords: Ewe, Endometritis, Oestrogen, Oxytetracycline, Lugol's iodine, Cefapirin.

I. Introduction

Sheep form an important part of the livestock in Iraq, and sheep Awassi is the most important strain in the semi-arid lands of the Middle East countries [1]. Reproductive failure occurs in many different forms, as failure to return to heat, repeat breeding and small litter size and, sometimes, even severe disorders may be difficult to detect clinically. The most factors of infertility are structural, functional and management factors.

Endometritis was considered as one of the causes of subfertility in ewes [2, 3]. Endometritis refer to inflammation of endometrial lining of uterus, most inflammatory lesion of uterus are infectious in origin and result either from ascending infection by organism that normally inhabits the lower genital tract or infectious agents introduced in to the uterine cavity during mating, artificial insemination, or post-partum [4]. The clinical signs of endometritis include a thin, watery, possibly purulent, malodorous vaginal discharge, association with retained fetal membrane, dystocia, retained dead lambs, abortion caused by toxoplasmosis, chlamydiosis, and listeriosis [5, 6], or uterine infection by *Corynebacterium pyogenes*, *Escherichia coli*, *Staphylococcus aureus*, *Pseudomonas aeruginosa*, *Klebsiella* species, *Proteus* species, *Streptococci* species and *Clostridium* species being the isolates [7, 8]. Recently, a study revealed that environmental bacteria were the most common isolates from cases of endometritis in cows: *Enterococcus faecalis* (36.2 %), *Streptococcus uberis* (19.1 %) and *Escherichia coli* (44.7 %) [9].

Endometritis in ewes, as in cattle, is mostly common in the luteal phase or postpartum [10], and induces embryonic loss, as a result of uterine tissue disruption or direct embryo cytolysis [11]. In addition, the absorption of bacterial components can prevent the growth of Graafian follicles and ovulation [12]. There are several methods described for endometritis treatment in farm animals like lugol's iodine, prostaglandin and systemic or local antibiotic [13, 14, 15, 16, 17]. This study was design to compare the efficiency of different methods for endometritis treatment (Table 1).

II. Materials And Methods

The study protocol was approved by the University Baghdad Research and postgraduate Committee. This study was conducted in goat station at Agurgof and other region in Baghdad city and 28 ewes aged 2-4 years old were used in duration from 2009-2013. Diagnosis of the disease was done by inspection of the pelvic region and vaginal examination using vaginal scope. Cases were divided randomly into four groups depending upon the type of treatment, each group composed of 7 ewes. The first group was treated with oestradiol benzoate 1mg injected intramuscularly (IM) and 2gm of oxytetracycline 20% as intrauterine therapy; the second group received oestradiol benzoate 1mg IM and 20ml of lugol's solution intrauterinarily (IU). The third group was given oestradiol benzoate 1mg IM and 1 tube of cefapirin (Metricure)[®] IU, while the fourth group was treated with 2gm of oxytetracycline 20% IM and oestradiol bezoate 1mg IM. Response to treatment and length

of open days was recorded. Reproductive criteria of animals were: nature and type of parturition, sex and number of lamb, viability of fetus and percentage of retained fetal membrane. Mean standard deviation, chi square and T-test were conducted for data analysis.

III. Results and Discussion

The results of this study were illustrated in Table 1 and 2. Table 1 showed that the response of first, second, third, and fourth group to treatment were (57.14, 100, 85.71 and 42.85) % respectively and the best result were recorded in 2nd group (100%). Regarding the open days, it was found that there was significant ($P<0.05$) differences between the 2nd and 3rd groups compared with 1st and 4th groups. The number of offspring was 14 male and 9 female out of treated ewes. Thirteen of pregnant ewes (65%) had normal parturition and seven of pregnant ewes (35%) suffered from dystocia. The percent of alive lambs was 69.4% and dead lamb was 30.5% from the total born lambs. Seventeen of pregnant ewes (85%) had single lamb while three of pregnant ewes (15%) had twin. The total percentage of retained placenta for the four groups was 30.43% (Table 2). The total response for treatment was 71.42% (20/28) and this response seems to be due to the vital role of oestradiol benzoate by increasing the uterine defense mechanism via enhancement the blood flow and local immunity of the uterus. An oestrogen based environment stimulates uterine contractility (and the resulting clearance in the contents of the uterus) and triggers an influx of neutrophils and immunoglobulins into the uterine mucosa [18, 19]. Moreover, oestrogen increases the release and metabolism of prostaglandin (PG) which enhance the myometrium contraction and uterine defense mechanism [20, 21]. It was found that the use of logul's iodine can stimulate myometrium contraction, blood supply and production of PGF2 α from uterus [22] and this effect may attributed to good response of the animals treated with logul's iodine in this study and this result agrees with L. Ramsingh *et al* [23]. The open days in the 2nd and 3rd groups compared with 1st and 4th groups was significantly ($P<0.05$) varied and provide effective response to treatment. Possibly, this result may be due to beneficial effect of logul's iodine and cefapirin. Cefapirin, a first generation cephalosporin antibiotic, is active against gram-positive organisms and anaerobic bacteria, but it is less active against gram-negative organisms. Therefore, cefapirin is the rational antibiotic choice for intrauterine infusion [24, 25, and 26]. Kasimanickam *et al.* [27] reported that a single treatment with cefapirin significantly improved the reproductive performance of cows with subclinical endometritis. Galvão [28] found that intrauterine administration of cefapirin benzathine was an effective treatment for clinical and subclinical endometritis. Furthermore, recent study found that cefapirin was a good therapy for endometritis [29].

Oxytetracycline is broad spectrum antibiotic and it is effective against many infections caused by Gram-positive and Gram-negative bacteria. Furthermore, oxytetracycline 20 % has long duration of action (72 hours) [30, 31] providing good antibacterial coverage. Our findings may be due to synergistic effect of systemic and intrauterine antibiotics with oestradiol by stimulation of endometrial blood flow and increasing uterine leukocytic response [32]. This result agrees with Sengupta D and Nandi PR [33].

Table 1: Different regimen of treatment, response to treatment and open days in treated animals.

Groups	No. of treated animals	Treatment regimen	Response No. %	Open days M \pm SE
1 st	7	Oestradiol Benzoate 1mg(1ml) + 2gm(10ml) oxyteracycline IU	4b 57.14%	120 \pm 9.33b
2 nd	7	Oestradiol Benzoate 1mg(1ml) + Logul's iodine (20ml) IU	7a 100%	108 \pm 10.2a
3 rd	7	Oestradiol Benzoate 1mg (1ml) I/M + Metricure 1 tube IU	6a 85.71%	112 \pm 9.31a
4 th	7	Oestradiol Benzoate 1mg (1ml) + oxytetracycline 20% IM	3c 42.85%	138 \pm 8.21c
Total	28		20/28 71.42%	

*Different letters means significant differences ($P<0.05$)

Table 2: The effect of treatment on nature and type of birth, sex, viability of lambs and incidence of retained placenta.

Group	No. of Ani.	No. of pregnant animals	Nature of parturition		Type of parturition		Sex of lamb		Viability		Retained placenta No. %
			D	N	S	T	M	F	L	D	
1 st	7	4 57.14 %	2	2	4	0	2	2	1	3	2 50%
2 nd	7	7 100%	1	6	6	1	4	4	6	2	2 12.5%
3 rd	7	6 85.71 %	1	5	4	2	6	2	7	1	1 12.5%
4 th	7	3 42.85 %	3	0	3	0	2	1	2	1	2 33.3%
Total	28	20 71.42 %	7 35 %	13 65 %	17 85 %	3 15 %	14 60.8 %	9 39.1 %	16 69.5 %	7 30.4 %	7 30.43%

N=normal, D=dystocia, S=single, T=twin, M=male, F=female, L=alive, D=dead

IV. Conclusion

We conclude that combination of IM oestadiol benzoate with logul's iodine solution as intrauterine therapy was effective in the treatment of endometritis in ewes since both drugs result in enhancement of uterine tonicity and contractility besides increasing uterine immunity resulting in evacuating the infection.

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