

Retained fetal membranes in Friesian-Holstein cows and effect of some treatment methods

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Abstract

The study was conducted on 76 Friesian-Holstein cows suffered from RFM, that presented in Al- Fayha station out of 822 cows. The cows included in this study aged 3-7 years and calved 1-5 times. The cows were divided into four groups; the 1st group (20 cows) treated with PGF_{2α} 22.5mg/ i.m., the 2nd group (20 cows) treated with oxytocine 50 I.U/i.m. plus Estradiol Benzoate 4mg/ i.m., the 3rd group (16 cows) treated by manual removal with antibiotic therapy (oxytetracyclin 20mg/kg/ B. W), the 4th group (20 cows) received no treatment and serve as a control group. The results showed that the incidence of RFM was 9.2%. RFM were more likely to occur following; male calving, calf death, abortion and dystocia. The incidence of RFM was greatly affected by the age of animal, number of calving and season. The results of treatments showed that injection of PGF_{2α} was more effective in treatment of RFM in comparison with the other regimen of treatments that used in this study.

Keywords: Retained placenta, Cows, PGF_{2α}, Oxytocin, Estradiol.

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احتباس المشيمة في أبقار الفريزيان-هولشتاين وتأثير بعض طرق العلاج

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الخلاصة

أجريت الدراسة على 76 بقرة سلالة الفريزيان- هولشتاين مصابة باحتباس المشيمة من مجموع 822 بقرة تواجدت في محطة الفيحاء ل التربية الأبقار. تراوحت اعمار الابقار بين 3-7 سنوات وعدد ولادتها 1-5 مرات. قسمت الابقار إلى أربع مجاميع، المجموعة الأولى (20 بقرة)، عولجت بهرمون البروستكلاندين F_{2α} وبجرعة 22,5 ملغم بالعضل، المجموعة الثانية (20 بقرة)، عولجت بحقنها بالاوكسيتوسين 50 وحدة دولية بالعضل مع الاستراديول بنزوت 4 ملغم بالعضل، المجموعة الثالثة (16 بقرة)، عولجت المجموعة الثالث بغازة المشيمة يدويا مع إعطاء مضاد حيوي (تراسيكلين 20 ملغم/ كغم من وزن الجسم) بالعضل، المجموعة الرابعة (20 بقرة) فتركت بدون علاج كمجموعة سيطرة. بينت نتائج الدراسة ان نسبة حدوث احتباس المشيمة كانت 9,2 %، وان احتباس المشيمة غالباً ما يحدث عقب ولادة الذكور، الإجهاض، عسر الولادة. كما تبين أن نسبة الحدوث تتأثر بصورة كبيرة بعمر الحيوان، عدد الولادات والموسم. أظهرت نتائج العلاج ان اعطاء البروستكلاندين F_{2α} كان اكثر فعالية في علاج احتباس المشيمة بالمقارنة مع بقية طرق العلاج المستخدمة في هذه الدراسة.

Introduction

Retention of the fetal membranes (RFM) is one of the most common conditions occurring in animals following parturition. In normal parturition the placenta of the cow falls away within 3 to 8 hours following calving. If the

placenta is retained longer than 8 to 12 hours the condition is considered pathological (1).

Retained placenta (RP) is due to the failure of the villi of the fetal cotyledons to separate from the crypts of the maternal caruncles. The incidence of RFM appears to be varying from area to area and from year to year and from

breed to breed (1-4). The incidence in cattle was ranged between 5.2 to 23.5% (1,5). There are many factors influencing the incidence of RFM which includes; abortion, dystocia, multiple birth, concurrent diseases, age, nutrition, season of the year and gestation length. The exact cause of RFM is still not known and this hampers the search for preventive and therapeutic measures (3,6-8).

Various prophylactic and therapeutic approaches have been postulated by many workers ranging from no treatment to hormonal, chemotherapeutic and manual removal (6,9-11).

This study was designed to investigate the incidence of RFM in Friesian- Holstein cows, factors affecting the incidence and the effect of different hormonal treatment on the time of placental expulsion.

Materials and Methods

The study was conducted on 76 Friesian- Holstein cows suffering from retained fetal membranes, out of 822 cows gives birth in Al- Fayha station. The age of cows ranged from 3 to 7 years and the number of parturition was 1-5 times. Cows were considered to have RFM, if the fetal membranes were not expelled within 12 hours. The cows were divided into four groups and subjected to the following treatments: Group I (20 cows), treated with prostaglandine F_{2α} 22.5 mg i.m., Group II (20 cows), treated with 50 I.U. oxytocine i.m. plus: Estradiol benzoate - 17 β 4 mg i.m., Group III (16 cows), treated by manual removal of placentas with systemic antibiotic (oxytetracycline 20 mg/ kg B.W.), Group VI (20 cows), received no treatment and serve as a control group.

All information's of importance were recorded carefully in special cards prepared for this purpose. Statistical analysis was done according to Steel and Torrie (12) using Tukey's w- procedure.

Results and Discussion

The incidence of the RFM in the Friesian- Holstein cattle was 9.2% and this incidence indicate the RFM in cattle is a significant feature necessitating further study to find the proper solution to this problems. This findings was in agreement with that recorded by Majeed et al. (5) and lower than that reported by Majeed (13) and Al- Myahi (14). A higher incidence rate was observed in younger cows than older one (Fig: 1). This might be due to shorter gestation periods (4, 8). Cows aged years showed a higher incidence (37%) of RFM than 4, 5, 6, 7 years old. This is in agreement with Majeed et al. (5) and Majeed (13).

The number of calving was negatively correlated with the incidence of RFM. A higher incidence (44.73%) affected the heifers after their calving while it was 10-13 % after second and third calving, 10- 21.05% after fourth and fifth one.

Dystocia, neonatal mortality as well as calf sex especially male calf; greatly affected the incidence of RFM as indicated in Table (1). Dystocia might cause over stretching and uterine inertia of the uterus which may hinder expulsion of the fetal membranes (5, 15).

High incidence of RFM was observed in cows with neonatal mortality (26.3%) and it could be attributed to absence of suckling behavior that stimulates oxytocine release that help placental expulsion (8).

It seems that premature deliveries and abortions (6.57%) are responsible for occurrence of RFM which may be attributed to circulatory disturbances so that placenta do not undergo normal sloughing and necrosis (detachment) that occurs in full term parturition (16, 17).

High incidence rate (65.7%) of RFM observed with male calving (Table 2), it could be related to shorter gestation period in cows having male calf and the large size and heavy weight of male calving causing circulatory disturbances and/ or over stretching or inertia of the uterus (1).

Table 1: Effect of various factors on the incidence of RFM in cattle.

Factors	No. (RFM)	Incidence (%)
Abortion	5	6.57
Dystocia	8	10.52
Neonatal mortality	20	26.31
Others	23	30.26
Total	76	

Table 2: Effect of calf sex on the incidence of RFM.

Sex of calf	No. (RFM)	Incidence (%)
Male	50	65.78
Female	26	34.21

Season might affect the incidence of RFM as most cases were occurred during January to March. This might be due to fact that more calving occur during this period.

The results of the different methods of treatment of RFM are shown in Table (3). Prostaglandin F_{2α} (PGF_{2α}) (22.5 mg/ i.m.) showed the best results with a mean of 3.5± 0.5 h and range of 3-4 h for the expulsion of RFM. There was a significant difference between this group (P<0.01) and other treated groups. Similar findings have been reported by other workers (8,11,18-20).

The effect of PGF_{2α} can be explained on the basis of the fact that PGF_{2α} increases uterine contractility with dilatation of the cervix, both of which enhance placental expulsion (3, 21). This results supports the findings of Gross et al. (22) where they demonstrated that injection of PGF_{2α} within one hour postpartum is effective in reducing

the incidence of placental retention for at least in the induced calving model.

Oxytocine and estradiol treated group showed an efficacy (70%). It has been suggested that oxytocine plays a role in dropping of placenta, through a stimulation effect on phagocytosis by uterine leucocyte which could explain our results (9, 23). Oestadiol facilitate oxytocine receptor gene transcription by increasing it more rapidly (24). Similar observations have been reported that exogenous oxytocin is used to prevent the occurrence of retained placenta immediately postpartum (1,9,25). There was a significant difference ($P<0.01$) between this group and other treated group.

The third group showed a low response (40%). This might be due to fact that manual removal having an adverse effect on uterine environment because there is possible injury of the endometrium and uterine cervix and does not produces any beneficial effect (26).

The fourth group showed the lowest response (20%). There was a significant difference between the treated ($P<0.01$) and control groups. Similar finding have been made by Majeed et al. (11) and Al- Haidari (19).

It could be concluded that using of PGF_{2α} is more effective for treatment of RFM than other treatment regimen.

Table 3: The effect of different methods of treatments on placental expulsion (Mean \pm SE).

Treatment	No. of animals	response	% of efficacy	Placental expulsion hours	Range hours
Prostaglandin F _{2α}	20	19	95%	3.5 ± 0.5^a	3- 6
Oxytocine (50 i.u/ i.m) + Estradiol	20	14	70%	7 ± 0.4^b	6- 9
Benzoate (4mg/ i.m)					
Manual Removal + oxytetracycline L. A. (20 mg/ K.B.W.)	16	8	40%	54 ± 2.6^c	24-72
Control group	20	4	20%	64 ± 1.4^d	48-72

Different superscripts indicates significant difference at 1% level.

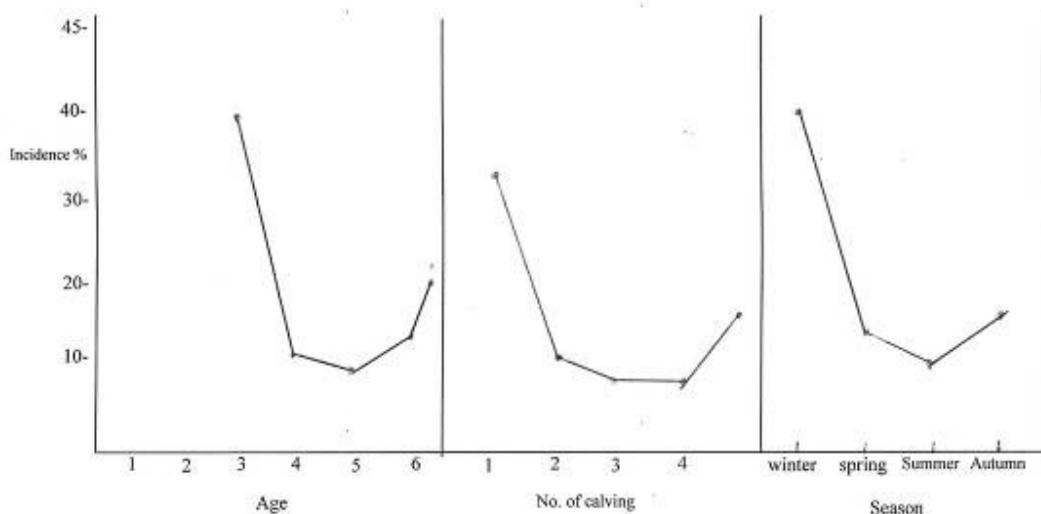


Fig. 1: Relationship between age, number of calving and season on the incidence of RFM.

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