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

A. F. Majeed, Q. M. Aboud, M. S. Hassan and A. Y. Muhammad

College of Veterinary Medicine, University of Al-Anbar, Al-Anbar, Iraq

Abstract

The study was conducted on 76 Friesian-Holstein cows suffering 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$_{2a}$ 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 (oxtetracyclin 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$_{2a}$ 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$_{2a}$, Oxytocin, Estradiol.

Available online at http://www.vetmedmosul.org/ijvs

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 F₃α 22.5 mg i.m., Group II (20 cows), treated with 50 I.U. oxytocine i.m. plus: Estradiol benzoit - 17β 4 mg i.m., Group III (16 cows), treated by manual removal of placentas with systemic antibiotic (oxteracycline 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.

<table>
<thead>
<tr>
<th>Factors</th>
<th>No. (RFM)</th>
<th>Incidence (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abortion</td>
<td>5</td>
<td>6.57</td>
</tr>
<tr>
<td>Dystocia</td>
<td>8</td>
<td>10.52</td>
</tr>
<tr>
<td>Neonatal mortality</td>
<td>20</td>
<td>26.31</td>
</tr>
<tr>
<td>Others</td>
<td>23</td>
<td>30.26</td>
</tr>
<tr>
<td>Total</td>
<td>76</td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Sex of calf</th>
<th>No. (RFM)</th>
<th>Incidence (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>50</td>
<td>65.78</td>
</tr>
<tr>
<td>Female</td>
<td>26</td>
<td>34.21</td>
</tr>
</tbody>
</table>

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 F₂α (PGF₂α) (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 PGF₂α can be explained on the basis of the fact that PGF₂α 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 PGF₂α 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). Oesteadiol 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 PGF2α is more
effective for treatment of RFM than other treatment
regimen.

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

<table>
<thead>
<tr>
<th>Treatment</th>
<th>No. of animals</th>
<th>response</th>
<th>% of efficacy</th>
<th>Placental expulsion hours</th>
<th>Range hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prostaglandin F2α</td>
<td>20</td>
<td>19</td>
<td>95%</td>
<td>3.5 ± 0.5a</td>
<td>3- 6</td>
</tr>
<tr>
<td>Oxytocine (50 i.u/ i.m) + Estradiol</td>
<td>20</td>
<td>14</td>
<td>70%</td>
<td>7 ± 0.4b</td>
<td>6- 9</td>
</tr>
<tr>
<td>Benzoate (4mg/ i.m)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manual Removal + oxytetracycline L. A.</td>
<td>16</td>
<td>8</td>
<td>40%</td>
<td>54 ± 2.6c</td>
<td>24-72</td>
</tr>
<tr>
<td>Control group</td>
<td>20</td>
<td>4</td>
<td>20%</td>
<td>64 ± 1.4d</td>
<td>48-72</td>
</tr>
</tbody>
</table>

Different superscripts indicates significant difference at 1% level.

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

References