

Incidence of Retained Placenta in Relation with Breed, Age, Parity and Body Condition Score of Dairy cows

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ABSTRACT

Retained placenta is an economically important reproductive disorder which occurs at the end of the reproductive cycle and has repercussions on the next. The study was conducted a total 1205 dairy cows from 9 upazila and 4 Metro Thana of Rajshahi during the period from July 2010 to June 2011. To evaluate the incidence of retained placenta in relation to breed, age, parity and body condition score of dairy cows. A questionnaire was prepared including information viz. name and address of farmer, breed, age; parity and body condition score for achievement of the study. The overall prevalence of retained placenta was 13.4%. The influencing factors including breed, age, parity, body condition score had significant effect ($P < 0.05$) on retained placenta. The highest prevalence was 10.7%, 4.5%, 5.6% and 7.1% observed in cross-breed, > 3 years age, 1st parity and fair body condition group of cows, respectively. From this study, it might be concluded that local breed, ≥ 3 years but less than 5 years age group, 3rd parity had least risk for retained placenta.

Key words: Incidence, retained placenta, age, parity, body condition and dairy cows.

INTRODUCTION

Livestock is an integral part of agriculture in our country. Cattle are the important species of livestock in Bangladesh. Cattle is an important factor in agricultural operation which provides valuable food of animal origin like milk, meat, milk products; industrial raw materials like skin and manures. Diseases of dairy cattle substantially limit production performances. Among the reproductive diseases retained placenta is an important reproductive cyclical problem that has repercussions on the next calving [1]. A retained placenta usually causes the cow to delay the next pregnancy for 2-6 months, late calving date in the following year and may result in an open cow next year [2]. A six-month delay may result in an open cow next year at pregnancy checking time. The tetanus, an important complication of retained placenta, caused by *Clostridium tetani* which can be found in the soil or in the feces and gets into the uterus where it set up an infection resulting lockjaw [3]. In dairy cows, retained placenta may be the cause of serious economic losses in the herd due to decreased milk production, illness and treatment cost, beside a decreased market value of the animal [4, 5]. There are many factors influencing the incidence of retained fetal membranes like abortion, dystocia, multiple birth, poor body condition score, age, nutritional deficiencies, hormonal imbalance [6, 7]. Aged cows showed a higher incidence [8] of retained fetal membrane than 4, 5, 6, 7 years old [9]. The number of calving was negatively correlated with the incidence of retained fetal membrane. A higher incidence (44.7%) affected the heifers and their calving while it was 10-13%

after second and third calving, 10-21% after fourth and fifth ones [10]. There is no available data on retained placenta in dairy cows at Rajshahi district. The present study has been taken to evaluate the prevalence of retained placenta in dairy cows on different factors at Rajshahi district in Bangladesh.

MATERIALS AND METHODS

The study area and data collection: The study was conducted a total 1205 calvings from 1205 dairy cows from 9 upazila and 4 Metro Thana of Rajshahi. The name of 9 upazilas were viz., Poba, Godagari, Tanor, Mohonpur, Bagmara, Puthia, Durgapur, Bagha and Charchat and 4 Metro Thanas namely Boalia, Rajpara, Motihar and Shamukhdum at Rajshahi district in Bangladesh during the period from July 2010 to June 2011. A structural questionnaire prepared for collecting the information and estimates the incidence of retained placenta in relation with age, parity and body weight and body condition of dairy cows. The data collected directly from owner of dairy farms and register books of government and private farms.

Management of cows: In experimental, the individual cow owners were housed their cows were traditional housing and most of them feeding straw and green grass, few concentrate feeding and little feeding balanced diet; very few were deworming and vaccinating their cows and most of the farmer were not waiting more than twelve hours for placental come out, after one to two hours they called doctors for manually removed. But mini and large sized

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dairy farmer had improved practiced on rearing, feeding, deworming and vaccination. When the cows prior to calved most of our farmer fed their animals worm rice gruel and separated from others animal with paddy straw bedding were used.

Table 1: The Incidence of retained placenta among cross and indigenous dairy cows.

Placental condition	Breed Type		Total	Chi- Square (χ^2) Calculated value (P<0.05)	Chi- Square(χ^2) tabulated value
	Local	Cross-bred			
Retained	33 (2.7%)	129 (10.7%)	162 (13.4%)	27.315*	3.841
Normally Expelled	437 (36.3%)	606 (50.3%)	1043 (86.6%)		
Total	470 (39.0%)	735 (61.0%)	1205 (100%)		

health condition the lumber vertebral processes of the cows were used as landmark. The body condition of the cows were divided into three classes such as- Group 1: Poor (n=181), Group 2: Fair (n=746) and Group 3: Good (n=278)

Grouping of Experimental Cows: To achieve the goal animals were group according to following considering factors:

Breed- The cows was classified in Indigenous or Local (n = 470) and Crossbred (n = 735).

Age- The age cows were determined from birth register and examined by teeth and cornual ring reading. After confirmation of age of these cows and then classified as follows- **Group I:** < 3 years (n=295), **Group II:** 3- <5 years (n=430), **Group III:** 5 - <7 years (n=291) and **Group IV:** > 7 years (n=189).

Parity- The cows those gave 1st calf considered as parity 1 (P₁), those gave 2nd calf consider as parity 2 (P₂), 3rd calf as parity 3 (P₃) and so on.

Table 2: Effect of age on Incidence of retained placenta of dairy cows

Body Condition Score (BCS) - In order to record the

Placental condition	Age group				Total	Chi- Square (χ^2) Calculated value (P<0.05).	Chi- Square (χ^2) tabulated value
	<3 years	3 years to < 5years	5 to < 7years	> 7 years			
Retained	54 (4.5%)	35 (2.9%)	37 (3.1%)	36 (3.0%)	162 (13.4%)	21.621*	7.815
Normally Expelled	241 (20.0%)	395 (32.8%)	254 (21.1%)	153 (12.7%)	1043 (86.6%)		
Total	295 (24.5%)	430 (35.7%)	291 (24.1%)	189 (15.7%)	1205 (100%)		

Where,

Poor = Marked emaciated.

Fair = Ribs are usually visible, little fat covered dorsal spines are barely visible.

Good = Animals are smooth and well covered but fat deposits are not marked.

Statistical analysis:

The data were compiled; SPSS program [11] to analyze the incidence and chi-square method used for interpretation of the findings. Retention of placenta (retained placenta, fetal membrane or afterbirth) was defined in this study as failure of spontaneous expulsion of the placenta within 12 hours after parturition.

RESULTS AND DISCUSSION

The overall incidence of retained placenta was 13.4% which was closer to various researchers and their incidence were 12.6% [12], 10.0% [13] and 8.8% [14] but differ from results were 7.0% [6], 1.96% [15] and 7.1% [16] respectively.

Table 3: The effects of parity on the Incidence of retained placenta of dairy cows

lowest incidence were in exotic and indigenous breed. Age had significance effects ($P < 0.05$) on

Placental condition	Parity						Total	Chi-Square (χ^2) Calculated value ($P < 0.05$).	Chi-Square (χ^2) tabulated value
	P ₁	P ₂	P ₃	P ₄	P ₅	P ₆			
Retained	68 (5.6%)	23 (1.9%)	12 (1.0%)	26 (2.2%)	9 (0.7%)	24 (2.0%)	162 (13.4%)	27.323*	11.070
Normally Expelled	368 (30.5%)	256 (21.2%)	159 (13.2%)	132 (11.0%)	58 (4.8%)	70 (5.8%)	1043 (86.6%)		
Total	436 (36.2%)	279 (23.2%)	171 (14.2%)	158 (13.2%)	67 (5.6%)	94 (7.8%)	1205 (100.0%)		

The low incidence of retention of placenta could be due to the area, breed and indiscriminination of data collection^[17], hormonal imbalance^[6], nutrition^[18,19] and genital infection^[20, 21]. The influencing factors including breed, age, parity and body condition score on investigation of retained placenta.

Breed had direct influence on retained placenta. Crossbred had higher (10.5%) incidence than indigenous (2.7%) one and significant effect ($P < 0.05$). Azad^[22] reported retained placenta in cross and local breed were 37.5% & 25.0%,

incidence of retained placenta of dairy cows. The incidence of retained placenta of dairy cows at Rajshahi was in <3 yrs, 3 yrs to < 5yrs, 5 to < 7yrs and > 7 yrs were 4.5%, 2.9%, 3.1% and 3.0%, respectively. Sarder et.al.^[14] observed 4.4%, 10.4%, 8.7% and 5.5% the incidence of retained placenta were in 4 years, 4 to 6 years, 6 to 8 years, respectively. Ali^[9] stated retained placenta with age of cows in <4yrs, 4-<7yrs, 7- <10 yrs and 10yrs were 9.4%, 19.2, 38.1% and 51.9%, respectively. Azad^[22] also obtained rate of retained placenta in 3-5 yrs and 5yrs of age group of cows were 33.3% and 37.5%. The older aged (> 7 years) of cows had the highest (4.5%) incidence of retained placenta than young (3

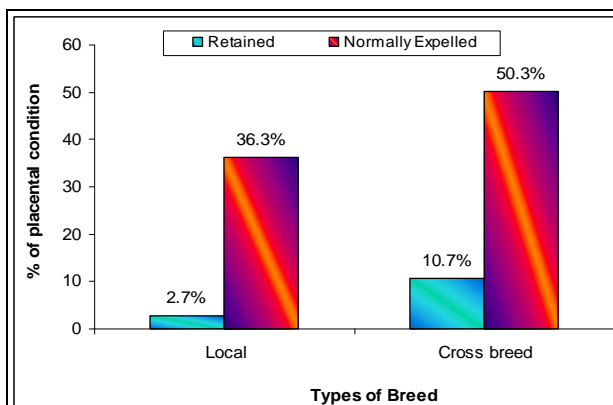


Figure 1: Graphical representation of percentages of retained placenta in relation with breed of cows.

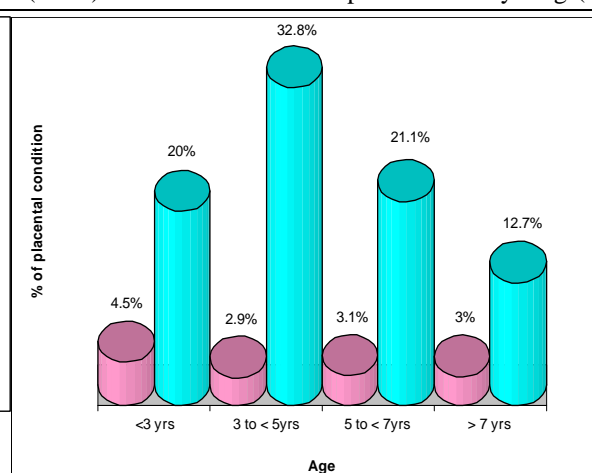


Figure 2: Cylinder bar diagram indicates the proportion of placental condition and age group of cows.

respectively but similar findings^[9, 21, 23] that influences of retained placenta and the highest and

to 5 years) age and 5 to 7 years of age similar result showed by various authors^[8, 9, 14, 16, 22, 24] and

partially agreed with [25, 26] but they differ in heifer (> 3 years) group.

and 37.5% for treatment and control group, respectively; Sarder [8] showed that retained placenta occurred significantly higher in cows over 6th parity than 3rd parity. Stevenson and Call [28] reported that retained placenta increases with advancing parity except in heifer. Similarly Saloniemi *et. al.* [29] showed that the incidence of

Table 4: The effects of body condition score on the Incidence of retained placenta of dairy cows

Placental condition	Body Condition Score			Total	Chi- Square(χ^2) Calculated value ($P<0.05$).	Chi- Square(χ^2) tabulated value
	Poor	Fair	Good			
Retained	37 (3.1%)	86 (7.1%)	39 (3.2%)	162 (13.4%)	10.052*	5.991
Normally Expelled	144 (12.0%)	660 (54.8%)	239 (19.8%)	1043 (86.6%)		
Total	181 (15.0%)	746 (61.9%)	278 (23.1%)	1205 (100%)		

* Significant at 5% level; P₁=1st calving, P₂=2ndcalving, P₃=3rdcalving, P₄=4thcalving, P₅=5thcalving & P₆=> 6th calving.

The parity had significant effect ($P<0.05$) on incidence of retained placenta of dairy cows. The highest occurrence of retained placenta was recorded 5.2% in first parity and decreasing 2.2% in 4th parity, 2.0 in 6th parity %, 1.9% in 2nd parity, 1.0% in 3rd parity and 0.7% 5th parity. Most of researcher showed similar results. Sarder *et. al.* [14] showed the incidence of retained placenta at 1st parity, 2nd parity, 3rd parity, 4th parity, 5th parity and >6th parity were 8.5%, 13.3%, 6.1%, 9.4%, 20% and 28.7%, respectively which is closer to this study. Gaafar *et. al.* [27] reported the incidence of retained placenta in Friesian cows increased significantly ($P<0.05$) from 14.20% for 1st parity to 54.60% for 8th parity. Azad [22] reported the rates of retention of placenta was in 1st-2nd and 3rd - 5th parity were 15.0%, 15%, 33.3%

retention of foetal membranes, metritis and dystocia was lowest in second party except 1st parity. From the owners' statement about 1st parity, it was known that the majority of the animals had had their premature delivery and history of the remaining animals was unknown. Grunert [6] stated that most of the cases placental retention was occurred by disturbance of the loosening mechanism in the placentomes.

Body condition had significant effect ($P<0.05$) on incidence of retained afterbirth of dairy cows. The present study showed 7.1%, 3.2% and 3.1% of incidence of retained placenta in fair, good and poor condition of cows. Whereas Sarder *et. al.* [14] reported that the prevalence of retained placenta was higher in good condition, lower in fair and other in poor condition cows, respectively. These differences may be due to several risk factors such as uterine contractility, last calving type, body condition during

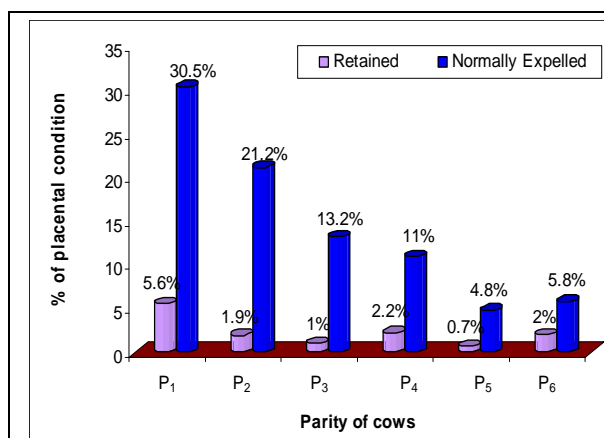


Figure 3: Bar diagram demonstrate the percentages of placental relation with parity of cows

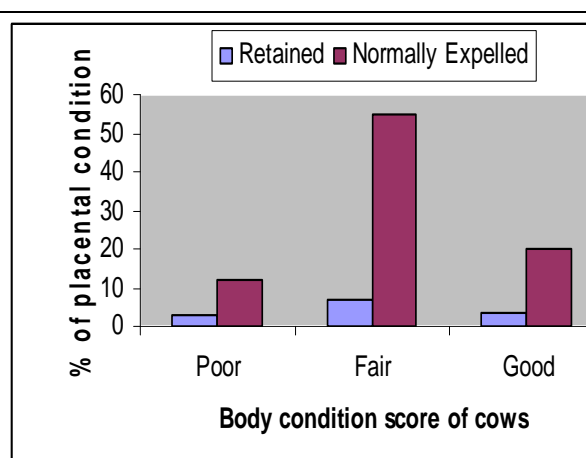


Figure 4: Bar diagram demonstrate the percentages of placental relation with BCS group of cows.

pregnancy, the time of onset of post partum oestrus, still birth, birth of twin, month and season of calving [17], hereditary [30, 31], gestation length [6], dietary deficiencies of carotene, vitamin A [19], progesterone and oestrogen imbalance at parturition [6], difficult delivery, age and parity of the cows [30] and other uterine infections, which predispose the cows to retention of after birth.

CONCLUSION

The local breed, 3 to 5 years age group, 2nd and 3rd parity, good body condition score had less chance of retention of placenta in dairy cows at Rajshahi district in Bangladesh.

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