

Retained placenta of dairy cows associated with managerial factors in Rajshahi, Bangladesh

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Abstract

Aim: The incidence of retained placenta of dairy cows in relation to individual animal level and farm management factors such as farm type, farm size, housing system, floor type, feed quality, time of parturition, farming experience of farmer and delivery pattern of cows was determined.

Materials and Methods: A total 1205 parturated dairy cows conducted in nine upazilas and four Metro Thana of Rajshahi district during July 2010 to June 2011 for attainment of the result. Individual animal and farm management factors associated with retained placenta were recorded in a structured questionnaire through face-to-face farmer's interview and reviewing farm records. The raw data were compiled and statistical SPSS program to analyze to obtained result.

Results: The overall incidence of retained placenta was 13.4%. The incidence was significantly higher in Local × Sahiwal genotype (4.6%) and late delivery (longer gestation period) (80%) than their counter groups ($p < 0.05$). The large farm (6.0%) had higher incidence and had no significant effect than medium and individual household. Similarly animals housed in Tin shed building with poor ventilation facilities (6.6%), animal housed in unscientific concrete floor (6.8%), animals mostly grassed along with small amount of straw supplied (5.4%) and a farmer had less than one year farming experience (5.3%) had not significant statistically show higher incidence of retained placenta.

Conclusion: The local genotype; mini farm; supplied better feed quality; vast farming experience of farmer and normal delivery with eutocia had less chance of retained placenta of dairy cows.

Keywords: dairy cows, incidence, managerial factors, retained placenta

Introduction

Livestock is a crucial part in the economic and social fabric of Bangladesh. In the year the total livestock and poultry of our Country is about 41.63 and 278.80 million [1]. The urban and rural society of Bangladesh has long been enjoying the contribution of livestock and poultry for meeting the demand of nutrition, livelihood, customs and culture is an agricultural dependent country. Reproductive diseases are of great concern to dairy producers worldwide. The estimation of loss and effects of diseases on milk production, fertility and survival are of great importance to assess cost-benefits of diagnosis, treatments and prevention efforts [2]. The incidence of RP varies from 2 to 10% of foaling in mares [3] and 4.0-16.1% in cow [4]. However, this incidence can be much higher in problem herds. Also, it increases during summer with increased parity, milk yield in the previous seasons and following birth of male fetus [5] and the breed where it may reach 54% in heavy draught than in light-weight mares [6]. The incidence of retention of placenta in cattle ranged between 5.2% and 23.5% [7,8]. Its incidence can be as high as 12% even in normal delivery [9]. Shamsuddin *et al.* [10] recorded about 63% of the retained placenta

in government dairy farm, Savar, Dhaka. Majeed [11] observed that 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. Retained placenta is one of the problematic reproductive diseases in our country. A retained placenta usually causes the cow to have an increased time from calving to the conception of the next calf. It is not uncommon for a cow with a retained placenta to delay the next pregnancy for 2-6 months. Obviously, a two-month delay will mean a late calving date in the following year. A six-month delay may result in an open cow next year at pregnancy checking time. So the problem retained placenta loss of production that fail to meet our protein demand and ultimately affect the food security achievement.

The authors conducted the study for achieving the following objectives;

- Calculation of the over all incidence of retention of placenta of dairy cows in Bangladesh.
- Evaluation of the effects of breed dairy cows on incidence retention of placenta.
- Determination of the effect of farm type, farm

Table-1. Genotype wise effect on retention of placenta of dairy cows

Placental condition	Genotype				Total	Chi- Square calculated value	Chi- Square tabulated value
	L	L × SL	L × F	L × F × SL			
Retained	33(2.7%)	56(4.6%)	43(3.6%)	30(2.5%)	162(13.4%)	30.311	7.815*
Normally Expelled	439(36.4%)	304(25.2%)	175(25.2%)	125(14.5%)	1043(86.6%)		
Total	472(39.2%)	360(29.9%)	218(18.1%)	155(12.9%)	1205(100.0%)		

L=Local, SL=Sahiwal, F=Friesian; * = significant at (P>0.05) level.

size, housing system, floor type of dairy cows on prevalence of retained placenta.

- Observation of the effect of feed quality of dairy cows on risk of retention of placenta.
- Establishing a sustainable managemental practices that could reduce the reproductive diseases like retained placenta of cows.

Materials and Methods

Study area: Different genotype of 1205 late stage pregnant dairy cows (from heifer to 8th parities an absolutely for dairy purpose) was considered as experimental materials for the present study. Extensive survey and data were collected from dairy farm of 9 upazila and 4 Metro Thana of Rajshahi. The name of 9 upazila viz. Poba, Godagari, Tanor, Mohonpur, Bagmara, Putia, Durgapur, Bagha and Charchat and 4 Metro Thana were Boalia, Rajpara, Motihar and Shamukhdum at Rajshahi district in Bangladesh during the period from July 2010 to June 2011 to evaluate the incidence of retained placenta.

Data collection: A questionnaire was prepared including information were name and address of farmer, genetic composition of breed, and management related factors such as farm type, farm size, housing system, floor type, feed quality, time of parturition, farming experience of farmer and delivery pattern for achievement of the study. The genetic composition of cows was identified by external characteristics and their ancestral register. Retained placenta (RP) measure by the definition is the failure to expel the fetal membranes within 12 to 24 hrs after calving and failure of the maternal immune system to successfully in bovines [4] or within 3 hours after foaling in equines [3]. Such phenomenon is a common, albeit poorly effect on milk yield and subsequent reproductive efficiency [5].

Grouping of animals: Proper data collection the experimental animals were grouped as follows:

Four genotype of cows were classified as Local (n = 470), Sahiwal × Local (n = 360), Holstein Friesian × Local (n = 220) and Friesian × Sahiwal × Local (n = 189). According to ownership, the farm were separated in private farm (n = 1025) and Government farm (n = 180). Farmer farmed with the number of cows, it was divided into Individual farm; owner having 1-5 cows (n = 341), Mini farm; owner having 6-10 cows (n = 347) and large size farm; those farm having > 10 cows (n = 517). The cows were divided into following groups considering housing pattern: These were- (Straw and mud build): Walls of cattle sheds were built by mud and roofs were straw made indicated as poor (n=322), (Half

building): Cattle sheds were built by fence and tin indicated as medium (n=565) and (Tin shed): Cattle sheds were built by brick and tin indicated as well (n=318).

The pattern of floor experimental individuals :

Categories to poor condition: cows were kept in traditional floor (n = 294), medium condition; cows were kept with little facilities of concrete floor and manger (n = 547) and good condition; cows were kept in scientific concrete floor and manger (n = 364). Feed quality of these cows were divided into 3 groups such as-Poor or traditional feed supply (only grazing and little straw feeding), Average (cows were supplied some concentrate and straw) and better (cows were supplied balanced feed i.e, concentrate, vitamin and mineral mixture before calving and diet including green grass & straw). On the basis of farming experience of farmer grouped into none i.e. farmer having less than one year farming experience (n= 509), little i.e. 1to 5 years farming experience (n=401) and Vast i.e. more than five years farming experience (n= 295). Again the studied cows were grouped on the basis of time of parturition such as- Early (Before length of gestation i.e. before than 273 days) (n=41), Normal (Normal gestation length i.e 273-291 days) (n=1056) and Late (After length of gestation i.e. after 291days time for delivery) (n=108). Finally the experimental animal categories into the delivery patern of cows e.g Yes: Present (n=69) means abnormal delivery (dystocia) and No: Absent (n=1136) means normal delivery (euticia).

Statistical analysis: The data were complied and statistical SPSS program [12] and Chi- Square test to compare the result.

Results and Discussion

The over all incidence of retained placenta was 13.4% and this incidence indicate the RFM in cows is a significant feature necessitating further study to find the proper solution to this problems. This finding was in agreement with that recorded by Islam et al, and Sarder *et al.* [13,14] but Islam et al and lower than that reported by others researchers [15-18]. The low incidence of retention of placenta could be due to the area, breed and indiscrimination of data collection [10] hormonal imbalance [19] nutrition [19,20] and genital infection [17,21].

The genotype had significant effect (P<0.05) and the highest prevalence in (4.6%) Friesian × Sahiwal and the lowest (2.5%) in Local × Sahiwal × Holstein there after (3.6%) Local × Holstein Friesian and (2.7%)

Table-2. The effects of farm size on the incidence of retained placenta of dairy cows

Placental condition	Farm Size			Total	Chi- Square calculated value	Chi- Square tabulated value	Remarks
	Individual	Mini	Large				
Retained	50(4.1%)	40(3.3%)	72(6.0%)	162(13.4%)	1.634	5.991	NS
Normally Expelled	291(24.1%)	307(25.5%)	445(36.9%)	1043(86.6%)			
Total	341(28.3%)	347(28.3%)	517(42.9%)	1205(100%)			

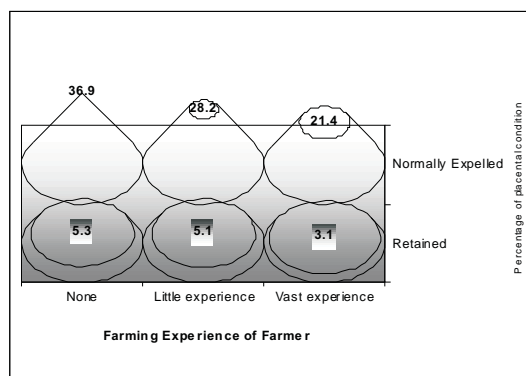
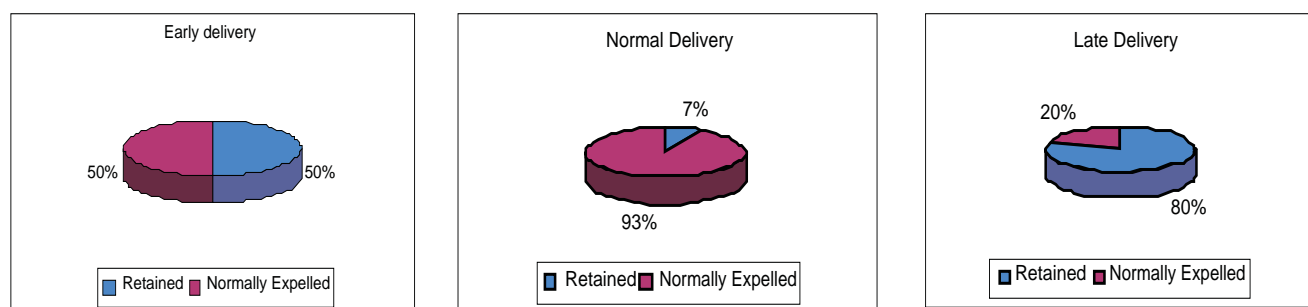
Table-3. The effects of manage mental factors like housing system, floor type and feed quality on the incidence of retained placenta of dairy cows

Type of Placenta	Housing system			Floor Type			Feed quality		
	Poor	Medium	Well	Poor	Medium	Good	Poor	Average	Better
Retained placenta	38(3.2%)	80(6.6%)	44(3.7%)	29(2.4%)	82(6.8%)	51(4.2%)	65(5.4%)	59(4.9%)	38(3.2%)
Normal expelled	284(23.6%)	485(40.2%)	274(22.7%)	265(22.0%)	465(38.6%)	313(26.0%)	375(31.1%)	386(32.0%)	282(23.4%)
Total	322(26.7%)	565(46.9%)	318(26.4%)	294(24.4%)	547(45.4%)	364(30.2%)	440(36.5%)	445(36.9%)	320(26.6%)
calculated Chi square	1.037			4.464			1.358		
tabulated Chi square ($P \leq 0.05$)	5.991			5.991			5.991		
Remarks	NS			NS			NS		

* = significant at ($P > 0.05$) level and NS= Non significant at ($P > 0.05$) level.

Table-4. Effect of length of gestation on the incidence of retained placenta of dairy cows

Placental condition	Length of gestation			Total	Chi- Square calculated value	Chi- Square tabulated
	Early delivery	Normal delivery	Late delivery			
Retained	54	75	33	162	318.895	5.991*
Normally Expelled	54	981	08	1043		
Total	108	1056	41	1205		

**Figure-1.** Cones diagram showing the percentages of retained placenta in relation with farming experience of farmer.**Figure-2.** Pie diagram represent the percentages of retained placenta in relation with length of gestation of cows.

Local bred. Sarder *et al.* [14] showed 6.7%, 13.2% & 13.4% of retained placenta in Local \times Friesian, Local \times Sahiwal & Local \times Sahiwal \times Friesian cows which was little but different from the present study. Samad *et al.* [22] showed that Sahiwal and Friesian crosses had the lowest (9.43%), where as local and Friesian crosses had the highest (60.20%) incidence of placental retention followed by miscellan-eous group which had an incidence of 39.69% which was disagreement with the present study.

Farm size, farming experience and manage mental factors (like housing system, floor type and feed quality) had no significant effect ($P > 0.05$) on retained placenta of dairy cows. The highest incidence of

retained placenta was in large dairy farms (6.8%), less than one year farming experience (5.3%), medium house (6.6%), medium floor (6.8%) and poor quality feed (5.4%) supplied than their correspondence group. Sarder [23] stated that retained placenta occurred more common in cows with poor housing system. Dryendahl *et al.* [24] reported similar results and mentioned that the risk of affection was rather greater during free than during the stall. Pavuna and Simunic [25] stated that there was no difference concerning the frequency of retention of placenta between the keeping animals in cows shed or free. Similarly, Grunert [15] reported that the incidence of retained placenta was related with nutritional imbalance.

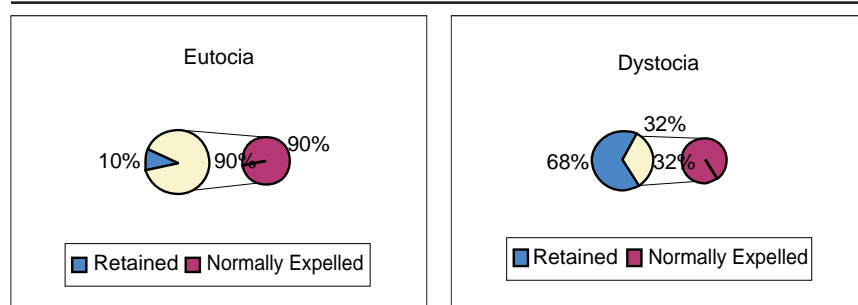


Figure-3. Pie diagram represent the percentages of placental condition in relation with dystocia and eutocia of cows.

This study had significant effect ($P < 0.05$) on length of gestation and pattern of delivery on incidence of retained placenta. The highest incidence observed in prolonged gestation period (80%) and dystocia (68%) related delivery. Samad *et al.* [22] reported 27.49% cases of retained placenta within normal gestation length (273-291 days), 52.64% in the abnormal gestation less than 273 days and 38.0% in over time higher and more than 291 days. The frequency differs from each other and they indicated 3.3 days shorter for cows with retained placenta [16], 14% incidence in early calved cows [26]. Many factors influence the retention of placenta including abortion, disease, dystocia, twin birth [27], nutrition and gestation length [24]. Erb and Morrison [24] reported that retention of placenta influenced by dystocia. Retention of placenta also influenced twinning [28] caesarean section, fetotomy, abortion [15,29] and nutritional muscular dystrophy [15].

Conclusions

- * The breed has genetic composition of Local × Sahiwal is more chance to retained placenta than local and other groups.
- * Large farm, poor quality feed are prone to incidence of retained placenta.
- * Prolong gestation period and dystocia has great opportunity for the incidence of retained placenta.

Author's contribution

It was the MS thesis experiment of first author. Other authors contributed equally. All authors read and approved the final manuscript.

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Competing interests

Authors declare that they have no competing interest.

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