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Retention of placenta and its associated factors in Bangladeshi zebu cattle

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Abstract

The aim was to find out the incidence of retention of placenta in 175 zebu cattle with regard to age, body condition score (BCS), parity, and feeding system. Pretested questionnaire was used for collecting the information. The overall incidence of manually removed placenta was 10.3%. Age, body condition score and feeding system had significant effect ($P<0.05$) on incidence of manual removal of placenta. The effect of parity was not significant. The highest incidence of 14.3%, 16%, 11.8% and 12% was in cows over 7 years of age, 6th parity, poor BCS and stall-feeding, respectively. It is suggested that animals aged 4 to 7 years, fair body condition, and free-range grazing were less susceptible to retained placenta. (*Bangl. vet*. 2021. Vol. 38, No. 1 - 2, 17 – 23)

Introduction

Retained fetal membranes is frequently encountered in dairy practice in Bangladesh (Rahman *et al.*, 1998) Bovine fetal membranes are usually expelled within 12 hours after delivery of the calf (Drillich *et al*., 2006). The incidence of retention of placenta in cattle ranged between 5.2% and 23.5% (Roberts, 1986; Majeed *et al*., 1989). Its incidence can be as high as 12% even after normal delivery (Dewan *et al.,* 1987). Shamsuddin *et al.* (1988) recorded about 63% of retained fetal membrane (RFM) in government dairy farm, Savar, Dhaka. Majeed *et al*. (2009) observed 9.2% incidence in Friesian-Holstein cattle. These incidences indicate that RFM in cattle is a significant feature necessitating further study. It is common for a cow with a retained placenta to delay the next pregnancy by 2-6 months. There are many factors influencing the incidence of retained fetal membranes like abortion, dystocia, multiple birth, poor BCS, age, nutritional deficiencies, hormonal imbalance (Grunert, 1986; Alam *et al*., 1987), season of the year and premature birth. However, there is no comprehensive study to determine the factors and incidence of retention of placenta in zebu cattle. The present study was designed to evaluate the effects on age, body condition score, parity, and feeding system of zebu cows on the incidence of retention of placenta.

Materials and Methods

Study areas and population

The study was conducted in Sadar Upazila (sub-district) of Mymensingh district. A total of 175 newly calved zebu cows were selected randomly.

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Management of cows

The animals were reared in traditional housing and feeding system. Most of them were fed straw (5 Kg/day) and green grasses (8.3 Kg/day). Few animals were fed a little concentrate (2 Kg/day) and commercial feed (1 Kg/day; ACI, Dhaka, Bangladesh). Most of the farmers called a veterinary health care provider for manual removal of placenta within one or two hours of calving.

Data collection

A pretested questionnaire included questions on age, breed, body condition score (BCS), parity, feeding system (grazing, stall or both), date of parturition, sex of calf, body weight, any abnormalities during parturition, placenta expulsion time after parturition, and treatment for placental retention.

Statistical analysis

All the data were entered into Microsoft Excel spreadsheet. Data were analysed by SPSS 20 statistical software. Chi Square (X^2) test was performed to evaluate those data (Version 20, Chicago, USA).

Results and Discussion

Effects of BCS on incidence of manual placenta removal are presented in Table 1. The overall incidence was 10.3%: the highest was in cows with BCS ≤ 2 (11.8%) and the lowest was 7.9% in cows with BCS (2-3). Incidence of retained placenta was significantly higher ($P<0.05$) in zebu cows with low BCS. This finding is in agreement with Haftu and Gashaw (2009) and Benti and Zewdie (2014), but contradicts Sahlu (2015) who found that cows with fat body condition were more susceptible to infections and metabolic problems, which contributed to difficult calving, retention of placenta and uterine infections. Likewise, Sarder *et al.* (2010) reported 13.8%, 6.8% and 12.6% retained placenta in higher in good body condition, lower in fair and in poor body condition scored cows, respectively.

Effects of age on incidence of manual placenta removal in zebu cows are presented in Table 2. The overall incidence was 10.3%, and the highest was in cows aged > 7 years (14.3%) and the lowest was in cows aged between 4 and 7 years (5.7%). The difference was significant ($P<0.05$). However, Sarder *et al*. (2010) reported 4.4%, 10.4%, 8.7% and 5.5% incidence of retained placenta in cows aged 4 years, 4 to 6 years, 6 to 8 years, respectively, which is not in agreement with the present study. Ali *et al.* (1997) reported 9.4%, 19.2%, 38.1% and 51.9% retained placenta in crossbred cows of <4 years, 4 - 7 years, 7 - 10 years and >10 years of age, respectively. Cows over 7 years had higher (4.5%) incidence of retained placenta than cows aged 3 to 5 years (Curds *et al*. 1985), consistent with the present study.

Effects of parity on incidence of manual placenta removal in zebu cows are presented in Table 3. Cows with highest incidence were in 6th parity and the next highest in first

parity. The differences were not significant. A similar finding was reported by Islam *et al*. (2012) and Sarder *et al.* (2010). The higher incidence of retained fetal membranes in multiparous cows than primiparous heifers is consistent with studies in Israel reported by Eger *et al*. (1985).

Table 1: Incidence of manual placenta removal and Body Condition Score

Risk factors Body condition score	Number of cows examined	Removal of placenta manually	Percentage %	X^2 value	P-value
Poor (≤ 2)	85	10	11.8	36.000	0.001 (**)
Fair (2-≤3)	63	5	07.9		
Good (3-≤5)	27	3	11.1		
Total	175	18	10.3		

**P<0.005 which are statistically significant. (Degree of freedom: 4)

Table 2: Age and incidence of manual placenta removal in zebu cows:

Risk factors Age (Years)	Total cows examined	Manually removed placenta	Percentage (%)	X^2 value	P-value
< 4	60	06	10.0	36.000	0.001 (**)
4- <7	52	03	05.7		
> 7	63	09	14.3		
Total	175	18	10.3		

**P<0.005 which are statistically significant. (Degree of freedom: 4)

Effects of feeding practices on incidence of manual placenta removal in zebu cows are presented in Table 4. The highest incidence was in stall-fed cows (12%) and the lowest in free-range cows (8%). The difference was significant (P<0.05). This might be due to poor housing, lack of exercise, lack of husbandry practices, poor nutrition, or harsh environment. Yousuf (2016) reported that lack of exercise and hypocalcaemia are the most frequent causes of decreased myometrium contractility. Sarder *et al*. (2008) reported that retained placenta was more common in cows with poor housing. Dryendahl *et al*. (1977) reported similar results and mentioned that the risk of retained placenta was greater during free-range feeding than during stall-feeding. However, over-condition and under condition as well as management defects and environmental factors can result in retention of placenta (Hayirli *et al*., 2002). Deyab (2000) and Gabr *et al*. (2005) found no differences between feeding system in the occurrence of retained placenta.

The placental expulsion time (hrs) in primiparous and multiparous cows is presented in Fig. 1. Placenta Expulsion period was significantly (P<0.001) higher in multiparous

animals compared to primiparous. The time was significantly (P<0.005) higher in stall-fed animals compared to both stall-fed and free-range animals (Fig. 2).

Table 3: Incidence of manual placenta removal and parity of cows

Risk factors	Parity						Total	X^2 value	P-value
Parity	P-1	P-2	P-3	P-4	P-5	P-6			
Manual placenta removal	5	3	1	2	3	4	18		
Percentage (%)	12.5	10	4.5	8	9	16	10.3		
Normal placenta Expulsion	35	27	21	23	30	21	157		
Percentage (%)	87.5	90	95.5	92	91	84	89.7	2.078	0.838 (NS)
Total	40	30	22	25	33	25	175		

P>0.05 which are statistically non- significant (Degree of freedom: 5)

Table 4: Incidence of manual placenta removal and Feeding practices of cow:

Risk factors / Feeding practice	Total cows examined	Manual removal of placenta	Percentage (%)	X^2 value	P-value
Stall-fed animals	100	12	12		
Free-range animals	75	6	8	18.000	0.001 (**)
Total	175	18	10.3		

**P<0.005 which are statistically significant. (Degree of freedom: 1)

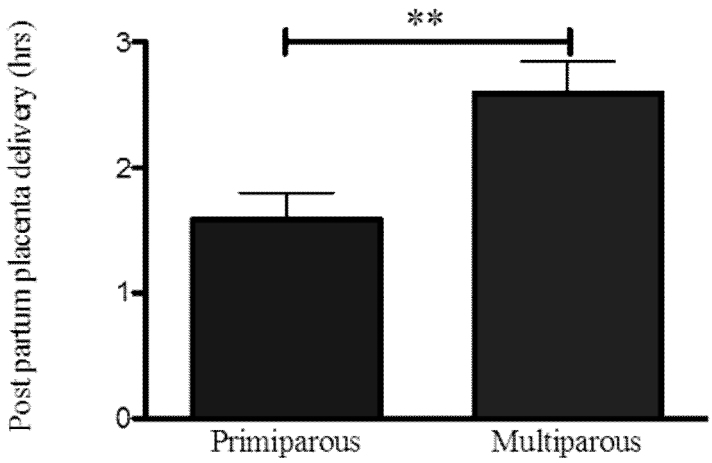

Fig. 1: Placenta delivery time (hrs) in primiparous and multiparous cows.

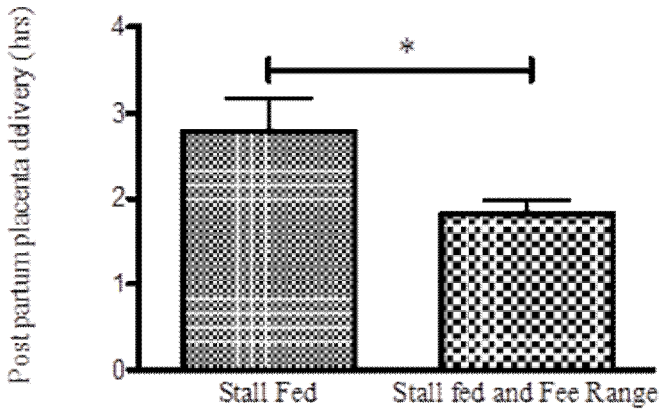

Fig. 2: Placenta delivery time (hrs) in stall-fed & stall-fed and free-ranged cows.

Conclusions

It is concluded that zebu cows of ≥ 4 years but < 7 years of age, with fair body condition, having 3rd parity and free-range feeding are less prone to retained placenta. Improved management systems particularly housing, feeding and veterinary health care of zebu cows could help in minimizing retention of fetal membranes.

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