

RETAINED PLACENTA IN AN IMPORTED FRIESIAN HERD UNDER EGYPTIAN CONDITIONS

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SUMMARY

The present study was carried out on 342 imported Friesian cattle to investigate the problem of placental retention with emphasis on some reproductive performance and blood constituents. Blood samples were collected from cows which retained their foetal membranes for more than 24 hours after birth as well as normal parturient cows.

Results indicated that retained placenta occurred in 16.72 % of cases, predominate in primipara (34.10 %) and during the hot season of the year (55.55 %). Significant decrease in plasma magnesium ($P < 0.01$); Inorg. phosphorus and Iron levels ($P < 0.05$) and increase in plasma progesterone values were detected in cases with retained placenta as compared to normal parturient cows. Moreover, the retained placenta causes delayed first post partum heat, calving interval with a reduction in fertility and a decrease in milk yields.

INTRODUCTION

Retained placenta in cattle causes great financial losses due to reduction of subsequent fertility following delayed uterine involution as well as retarded first postpartum heat (Joosten et al., 1988).

The condition may either be due to infectious (bacterial, viral, fungal, protozoal) or non infectious (hormonal, allergic, toxic, nutritional, genetic and mechanical factors) causes (Sloss & Dufty, 1980).

Although the problem of retention of placenta was studied by many workers, yet it still needs further investigations.

The aim of the present study is to obiate the problem of placental retention in primi-and multiparous cows during different seasons of the year with emphasis on some blood constituents and reproductive parameters in an imported Friesian herd.

MATERIAL AND METHODS

The present study was carried out in Shoha farm at Mansoura Governorate, Egypt.

Experimental animals:

An imported Friesian herd (342 head) was followed up for a period of one year. Animals were raised under the system of management belonging to the Egyptian Ministry of Agriculture.

Blood samples were collected just after parturition from 70 multiparous cows when dropped the placenta or retained it for more than 24 hours (Bosu et al., 1988).

Incidence of retained placenta, first postpartum heat and calving interval were recorded.

Blood analysis:

Plasma were assayed for progesterone (R. I. A., Abraham, 1971). Calcium, inorganic phosphorus, total proteins, albumins and glucose were colorimetrically determined (Henery, 1981) using chemical kits. Magnesium, Zinc, Copper and Iron were estimated by atomic absorption spectrophotometer (Varley, 1976). Vitamin E was estimated colorimetrically according to Hashim and Schuttrlnger (1966).

Statistical analysis:

Data were statistically computed according to Snedecor and Cochran (1976).

RESULTS

*Incidence of retained placenta in cattle:

Table (1) shows that 16.72 % of p Friesian cattle retained their placenta more than 24 hours. Primipara showed high incidence compared to multipara cows.

Moreover, a seasonal trend was clear, incidence was higher during Spring and Summer than during Winter and Autumn.

*Effect of retained placenta on reproductive parameters:

The effect of placental retention on first postpartum heat and calving interval was reported in table (2). It is clear that cows with retained placenta showed the first post partum heat later than normal cows ($P < 0.01$). Moreover, calving interval was also longer in retained placenta cows compared to normal ones ($P < 0.05$). 40 cows showing retention of placenta were treated later on due to unsatisfactory response to treatment for infertility, and low milk production.

* Blood analysis:

Table (3) revealed significant, increase in progesterone ($P < 0.05$), decrease in Magnesium ($P < 0.01$), Iron ($P < 0.01$) and inorganic Phosphorus ($P < 0.05$) plasma values in retained placenta group compared to normal group.

Table 1 : Effect of parity and season of the year on the incidence of retained placenta in Friesian cattle (%),

Animals	Season of Calving	Winter	Spring	Summer	Autumn	Total
Primi- parous (118)	-(No) retention	2	18	5	5	30
	- Total cows	31	35	9	13	88
	- %	6.45	51.43	55.55	38.46	34.10
Multi- parous (224)	-(No) retention	4	2	4	9	19
	- Total cows	63	66	30	46	205
	- %	6.35	3.03	13.33	19.56	9.27
Total (342)	-(No) retention	6	20	9	14	49
	- Total cows	94	101	39	59	293
	- %	6.38	19.80	23.07	23.73	16.72

Table 2 : Effect of retained placenta on first post partum heat and calving interval in Friesian cows :
(X \pm S.D.) .

	Normal calving cows	Retained cows
- First postpartum heat (days)	40.80 \pm 6.26 \neq (20)	120 \pm 79.37 ^{**} \neq (19)
- Calving interval (days)	333.80 \pm 7.01 \neq (20)	391.67 \pm 34.03 [*] \neq (19)

* P < 0.05

** P < 0.01

\neq (Number of animals)

Table (3) Effect of retained placenta on some blood plasma constituents in Friesian cows.

Plasma constituents	Normal calving cows		Cows with retained Placenta	
Progesterone (mg/ml)	0.05	± 0.04	0.08	± 0.04
Calcium (mg %)	11.32	± 0.88	11.24	± 1.41
Inorganic phosphorus (mg %)	5.42	± 0.59	4.41	± 0.79*
Magnesium (mg %)	4.17	± 0.07	3.30	± 0.63**
Iron (ug %)	281.25	± 79.48	198.42	± 86.99*
Copper (ug %)	79.50	± 7.83	75.50	± 9.68
Zinc (ug %)	63.75	± 11.92	71.79	± 18.03
Total proteins (gm %)	7.93	± 0.96	7.39	± 1.46
Albumin (gm %)	2.58	± 0.31	2.20	± 0.84
Globulin (gm %)	5.35	± 1.04	5.21	± 2.11
A / G ratio	0.51	± 0.77	0.75	± 0.32
Glucose (mg %)	99.62	± 5.53	97.59	± 7.51
Vit. E (mg %)	2.62	± 0.41	2.46	± 2.81

* P < 0.05

** P < 0.01

Vitamin E level in plasma of cows showing retained placenta was found lower than normal parturient cows.

DISCUSSION

Retention of placenta is observed more frequently in bovine than in other species (Sloss and Dufty, 1980). In the majority of cases the condition is caused by a disturbance of the loosening mechanism in the placentomes mainly due to metabolic disorders before calving or due to premature delivery (Serur et al., 1985) and (Hattab and Abd El-Mognney, 1994). However the condition plays a very important role in reduction of subsequent fertility and production (Wagner and Hansel, 1969 and Roberts, 1986).

In the present study, the incidence of retained placenta was higher in primiparous as compared to multiparous cows. Similar results were reported by Sloss and Dufty (1980) and Roberts (1986) who attributed the condition to the reduced gestation and hormonal changes (lower estradiol and prostaglandin) in heifers. On the other hand Wagner and Hansel (1969) and Arthur et al. (1989) reported that old cows are more affected than young ones due to increased incidence of uterine inertia.

The incidence of retained placenta was higher during the hot seasons of the year (Spring and Summer) than the cold seasons (Winter and Autumn). In this respect, Dubois and Williams (1980) mentioned that heat stress can reduce gestation length and consequently increase the

incidence of retained placenta. Also, heat stress was reported to enhance placental retention during hot season due to increasing incidence of genital infection (Serur et al., 1985 and Robert, 1986). On the other hand, plane of nutrition at parturition is a predisposing factor (Robert, 1986) and Hurley & Doane (1989).

The lowered reproductive efficiency (delayed postpartum heat, long calving interval and high percentage of culling) of previously affected cows in the current work could be attributed to the degenerative changes and necrotic processes that might have occurred in the endometrium followed by the retention process which hinders the subsequent fertilization and conception (Roberts, 1986 and Etherington et al., 1991).

In the present study, the increased plasma progesterone level in cows suffering from placental retention compared to normal postparturient cows agrees with results of Elecko et al. (1990). However this result is a confirmation of a probable endocrine explanation for placental retention due to myometrial dysfunction as well as premature birth (Arthur et al., 1989 and Etherington et al., 1991).

Studies on blood constituents during different reproductive conditions and problems are helpful in confirming metabolic features and for building up knowledge on the situation of a herd to improve handling of future cases via supplementation of the deficient elements to affected animals and / or for prophylaxis (Ahmed, 1991).

In the present study, retention of placenta induced significant decrease in Plasma inorganic phosphorus, Magnesium and Iron levels compared to normal animals. Similar result was reported by Lucey et al., (1986) concerning magnesium level. However, Mutiga (1993) found no significant change in phosphorus level between cows that retained placentas and those that did not.

The present changes could be attributed to general health status as well as sensitivity of the uterine musculature responsible for evoking the myometrial contractions essential for dropping of the placenta, (Serur et al., 1985 and Roberts, 1986).

Hurley & Doane (1989); Brzezinska et al., (1994) stressed on the inter-relationship between vit. E and selenium deficiency and placental retention. However the present study indicated a non significant decrease in vitamin E level in the affected animals. The condition may be explained in light of, inadequate dietary antioxidants resulted in increased oxidative stress, production of lipid peroxides and in turn increased incidence of retained foetal membranes in dairy cows (Brzezinska et al., 1994).

In conclusion, retention of the placenta represents an important problem in imported Friesian herd in Egypt especially in primipara and during the hot season of the year and the condition still needs further investigations to clarify the actual causes.

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