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Serum Biochemical Profile In Normally Calved and Retained Foetal Membranes Crossbred Cows

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Abstract

Serum biochemical profile revealed that the serum calcium, inorganic phosphorus, total protein and serum glucose in cross-bred cows were significantly ($P < 0.05$) lower after 12 hrs post-partum and 7th day post-partum in cows having RFM as compared to normally calved cows. Lower levels of serum calcium, inorganic phosphorus, total protein and glucose may be responsible for retention of foetal membranes.

Key Words: Serum biochemical, Retained foetal membranes, Normally calved, crossbred cows, parturition

Introduction

Retention of foetal membranes is one of the most common conditions occurring in dairy cows following parturition. It is commonly followed by delayed involution of the uterus, drop in milk production and infertility resulting in economic loss to the owner (Lalrintluanga and Lalhuntluangi, 2010). It may arise out of insufficient uterine contraction, nutritional deficiency, hormonal imbalance and reproductive disorders. However, macro and micro mineral deficiency near parturition might be responsible for retention of foetal membranes in cross-bred cattle (Sheetal *et al.*, 2014). Therefore a study was carried out to ascertain biochemical profile in retained foetal membrane crossbred cows and its comparison was made with normally calved cows.

Materials and Methods

The proposed study was carried out on clinical cases of 24 crossbred cows brought to the Department of Veterinary Gynaecology and Obstetrics, College of Veterinary Science and Animal Husbandry, Mhow, college dairy farm and villages in and around Mhow including ambulatory clinics. The cows were divided into control group, consisted of 6 cross-bred cows which have normal 3rd phase of parturition and foetal membranes were normally expelled within 12 hours and RFM group, consisted of total 18 cross-bred cows with retained foetal membranes for more than 12 hours. Five ml blood samples were collected from jugular vein of the cows 12 hrs post partum and on 7th day post partum and kept the vial without anticoagulant for separation of serum and separated serum

was stored in a sterilized vial at -20°C for biochemical analysis. Biochemical parameters viz. Serum calcium (Moorhead and Briggs, 1974), Serum Phosphorus (Gomori, 1942), Serum Total Protein (Burtis *et al.*, 2012) and Serum Glucose (Burtis *et al.*, 2012) were carried out with the semi-automatic biochemical analyser by using Ark diagnostic kit.

Statistical analysis was done as per the standard method by application using Completely Randomised Design (Snedecor and Cochran, 1994).

Results and Discussion

The mean values of serum calcium, inorganic phosphorus, total protein and glucose of normally calved cows and retained foetal membranes cross-bred cows are presented in Table 1.

Table 01: Serum biochemical constituents in control and RFM cross-bred cows at 12 hours and 7th day post partum (Mean±SE)

S. No.	Parameters	12 hrs post partum		7 th day post partum	
		Control (6)	RFM (18)	Control (6)	RFM (18)
1.	Serum Calcium (mg/dl)	9.50±0.25 ^a	7.05±0.10 ^b	10.35±0.26 ^a	8.05±0.15 ^b
2.	Serum Inorganic Phosphorus (mg/dl)	4.63±0.10 ^a	3.43±0.07 ^b	4.96±0.09 ^a	3.95±0.08 ^b
3.	Serum Total Protein (g/dl)	5.55±0.19 ^a	4.22±0.07 ^b	6.35±0.30 ^a	4.60±0.06 ^b
4.	Serum Glucose (mg/dl)	44.68±1.01 ^a	34.48±0.51 ^b	62.13±1.20 ^a	44.28±0.62 ^b

Figs.in parenthesis indicate number of animals. Means having different superscript differ significantly.

The data revealed that all the four biochemical parameters viz. Serum Calcium, Inorganic Phosphorus, total serum protein and serum Glucose were found significantly ($P < 0.05$) low in RFM cross bred cows at both 12 hrs post partum and on 7th day post partum as compared to control normally calved cross bred cows. The physiological expulsion of foetal membranes in 3rd phase of parturition requires adequate and regular uterine contraction, Hypocalcaemia also results in the loss of muscle tone in uterus and prevent the collagenase activity, which increased incidence of retention of foetal membranes and delays the involution of uterus (Morrow, 1980). The present findings are in agreement with Kornmasitsuk *et al.* (2002), Akar and Yildiz (2005), Davasaztabrizri (2012) and Sheetal *et al.* (2014). Lower phosphorus in RFM may attribute to the decreased uterine muscle contraction. (Tillard *et al.*, 2008)

Our reports on low protein in RFM cows corroborate with the reports of Ratre (1998) and Kumari *et al.* (2014). Low level of serum total protein obtained in cows due to loss of blood and tissues during parturition, total protein levels touched the minimum at the time when cows retained foetal membranes which indicate that these cows had poor health with hypoproteinaemia.

Our results on glucose level corresponds with the reports of Kaczmarowski *et al.* (2005), Sharma *et al.* (2013) and Kumari *et al.* (2014). The higher serum glucose level on the day of parturition is an indication of physiological stress, leading to cortisol release and related increase in blood glucose level and also a metabolic signal providing information for the central control of GnRH release (Ohkura *et al.*, 2004).

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Conflict of Interest: All authors express no conflict of interest.

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