

Serum Biochemical Profile of Post-Partum Metritic Cow

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Abstract

Present study was conducted to find out the relationship between serum biochemical profile and postpartum metritis. Mainly serum glucose, total protein, albumin, albumin globulin ratio, blood urea nitrogen (BUN), creatinine and calcium were studied. Colorimetric method was used for quantitative estimation of biochemical profile. Twenty seven animals with recent history of calving and subsequent metritis were included in the study. On analysis, serum glucose was found to be 22.3 ± 2.18 mg/dl, total protein 6.1 ± 0.51 g/dl, albumin 2.8 ± 0.29 g/dl, BUN 27 ± 0.19 mg/dl, creatinine 1.8 ± 0.13 mg/dl and calcium was 7.0 ± 0.43 mg/dl. On comparison of this result with normal values it was found that glucose and calcium was below the normal level and albumin fraction was less than the globulin. It was concluded that in postpartum metritis, cattle exhibit hypocalcaemia, hypoglycaemia and reduced globulin fraction, whereas total protein, albumin, BUN and creatinine did not exhibit much variation. Ketone bodies were present in urine of 90% of tested animals.

Keywords: Serum, Biochemical, Post-partum, Metritis, Cow, Farmer, Reproductive Problems.

Introduction

Reproductive problems are common cause of profit loss to the farmers as far as dairy farming is concerned. Post-partum metritis is one of the reproductive problems commonly encountered. One of the complications related to parturition especially when there is outside interference is post partum metritis. Most of the cases of post-partum metritis are management related. Interference by inexperienced and unqualified hands will definitely result in post partum metritis. Some animals with normal calving also develop post partum metritis. Present study was aimed to analyze the serum biochemical profile of cattle with post-partum metritis. Serum biochemical parameters studied were total protein, serum albumin, serum globulin, albumin globulin ratio, serum glucose, serum calcium, BUN and creatinine.

Materials and Methods

Animals of various age groups with a recent history of calving and post-partum metritis were selected for study. Post-partum metritis was diagnosed by observing the cloudy, purulent and foul smelling discharge. Per-rectal examination was done to confirm

the diagnosis. Uterus with a doughy pus filled feeling was confirmed as post partum metritis. Twenty seven such animals were included in study.

10 ml blood was collected from jugular vein and serum was separated. In all animals along with blood, urine was also collected and Rotheras test was performed for urine ketone bodies. This serum was analysed using photoelectric calorimeter (Photometer 5010). Replicate samples were kept for each test and average of their results was taken as final value for that case. Average values of 27 animals were calculated.

Serum was analyzed for total protein, albumin, glucose, calcium blood urea nitrogen and creatinine. Albumin:Globulin ratio was calculated. All the tests were performed in photometer 5010. Total protein, albumin, glucose and calcium were estimated by colorimetric test, with diagnostic kits (AGAPPE Diagnostics).

Total protein was estimated by Direct Biuret method, albumin by Bromocresol green methodology, glucose by enzymatic calorimetric method, calcium by modified Orthocresolphthalein chelation (OCPC) method, Creatin and Blood Urea Nitrogen determined by kinetic method. Creatin was

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detected by modified Joffe's method and BUN by enzymatic method (Urease-GLDH).

Results and Discussion

Result of samples analysed are given in table-1.

Table-1. Serum biochemical profile of post partum metritis affected cows

| Sl. No. | Biochemical profile | Post-partum metritis n = 27 | Normal Range Radostitis <i>et al.</i> , 2000) |
|---------|----------------------|-----------------------------|---|
| 1. | Total protein (g/dl) | 6.1 ± 0.51 | 5.7-8.1 |
| 2. | Albumin (g/dl) | 2.8 ± 0.29 | 2.1-3.6 |
| 3. | Glucose (mg/dl) | 22.3 ± 2.18 | 45-75 |
| 4. | BUN (mg/dl) | 27 ± 0.19 | 6-27 |
| 5. | Creatin (mg/dl) | 1.8 ± 0.13 | 1-2 |
| 6. | Calcium (mg/dl) | 7.0 ± 0.43 | 9.7-12.4 |

Globulin fraction was 3.3 g/dl. Albumin globulin ratio was 0.85. Albumin globulin ratio was altered with more globulin than albumin which is almost equal in normal animals. All animals except, six, tested were positive for urine ketone bodies

The serum total protein of animals with post partum metritis was found to be with in the reference range (*Radostits et al.*, 2000). Albumin was also in normal reference range. Albumin globulin ratio was altered. Globulin was higher than the albumin fraction, which is almost equal in normal cattle. This finding is in agreement with observations of Benjamin (1978). He reported that globulin fraction increases in case of bacterial infection.

Average glucose level of all the animals was below the reference values. This indicates severe ketosis in all the animals. Their urine samples were positive for ketone bodies. BUN and creatine was within reference range. But calcium was below reference range indicating hypocalcaemia. Dietary mineral elements are known to affect the physiological functions in general and reproduction in particular (Hidioglou, 1979). Most minerals act as co-factors or activators of enzymes systems and elements. Calcium sensitizes female tubular genitalia for the action of hormone like oxytocin. So, calcium deficiency can act as a predisposing factor for uterine inertia leading to dystocia, retention of foetal membranes and metritis (*Dabas et al.*, 1987 and *Mohanty et al.* 1984).

Low level of serum calcium and glucose was also

observed by *Mandali et al.* (2002) in cattle and buffalo affected with retention of foetal membrane. Similar findings were also reported by *Dutta et al.* (1983).

Another work by *Patel et al.* (1999) reported significantly low level of blood glucose and serum total protein, calcium and inorganic phosphorus four weeks post partum in buffaloes which had retention of foetal membrane during parturition.

Conclusion

From the above results, it is clear that animals with post-partum metritis having low levels of serum glucose and calcium and an altered albumin globulin ratio with more globulin, whereas serum urea nitrogen, creatinine and total protein values did not show any alteration.

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