

PROFILES OF SOME BIOCHEMICAL CONSTITUENTS IN PERIPARTURIENT AND UTERINE TORSION AFFECTED BUFFALOES

NEERAJ ARORA¹, R. A. LUTHRA², ANAND KUMAR PANDEY^{3*} and GYAN SINGH³

¹Department of Veterinary Surgery and Radiology, ²Department of Veterinary Gynaecology and Obstetrics

³Teaching Veterinary Clinical Complex, College of Veterinary Sciences

Lala Lajpat Rai University of Veterinary and Animal Sciences, Hisar-125 004

Received: 07.02.2013; Accepted: 20.05.2013

ABSTRACT

The present study was conducted to determine the enzymatic activity and total protein concentrations in buffaloes suffering from uterine torsion (n=6). Six buffaloes with normal parturition (n=6) acted as control group. The activities of aspartate transaminase and alanine transaminase were significantly ($p<0.05$) higher in uterine torsion affected buffaloes as compared to control, however, total protein concentrations were lower ($p<0.05$) in former as compared to latter. The study indicated that the enzyme activities increased in uterine torsion affected buffaloes.

Key words: Aspartate transaminase, alanine transaminase, uterine torsion, buffalo.

There are several conditions which affect the normal progression of pregnancy and parturition in buffaloes. Uterine torsion is recognized as a major obstetrical disorder in buffaloes causing dystocia (Srinivas *et al.*, 2007) and caesarean section is the only choice to solve this disorder in delayed cases (Kumar, 2012). The occurrence of uterine torsion increases adrenocortical activity and influences blood vascular cellular components as well as the metabolism of liver, kidney and muscular system. Normal parturition in bovines has negligible influence on the blood enzymes (Hussein and Abd Ellah, 2008).

Uterine torsion is associated with muscle damage or hepatic dysfunction consequently leading to stressful condition (Manju *et al.*, 1985). The alterations in blood parameters are suggestive of deteriorating condition of the dam and thus help to decide about the institution of various therapies, viz. anti-stress, liver protection and electrolyte therapy (Ghuman, 2010). For the treatment of torsion cases, either of the techniques is being used: per-vaginal rotation of fetus, rolling of dam and caesarean section, judiciously on the basis of blood profiles and the feasibility of the technique (Ghuman, 2010). Therefore, the present study was conducted to monitor certain biochemical constituents in blood of Murrah buffaloes affected with uterine torsion.

MATERIALS AND METHODS

Twelve full term pregnant Murrah buffaloes were divided into two groups viz. normal healthy group and treatment group with six animals in each. The animals brought to the clinic of the University with the history of uterine torsion were included in treatment group. Torsion was confirmed through per-vaginal and per-rectal examination. All the affected animals were subjected to rolling by using Schaffer's method and in all the animals uterus was successfully detorted. After detortion, the fetus was removed per vaginum by manual manipulations. Blood samples were collected from normal healthy group just before parturition, after parturition and then 24 hrs after parturition. In treatment group blood samples were collected before detortion, immediately after removal of the fetus and 24 hrs after the removal of fetus. Serum was separated and stored at -20°C until analysis. All the serum samples were analysed for the aspartate transaminase (AST), alanine transaminase (ALT) and total protein using standard analytical kits by an auto analyzer (Siemens, RA-50 Chemistry Analyzer).

RESULTS AND DISCUSSION

In the present study, AST and ALT activities were significantly higher ($p<0.05$) in the treatment group as compared to control animals (Table 1). These observations are in accordance with that of Phogat (1987), Singla *et al.* (1992) and Amer and Hashem (2008). However,

*Corresponding author: dranandpandey@gmail.com

Table 1
Serum concentrations of aspartate transaminase, alanine transaminase and total proteins in uterine torsion-affected buffaloes

Group	Parameter	Before parturition	Just after parturition	24 hours after parturition
Control	AST (I.U./L)	59.64±0.43 ^a	60.82±0.39 ^a	60.56±0.66 ^a
	ALT (I.U./L)	31.71±1.9 ^a	38.81±2.89 ^a	38.05±2.19
	Total protein (gm/dl)	9.97±0.40 ^a	10.51±0.45 ^a	10.1±0.44 ^a
Treatment	Before detorsion		Just after removal of foetus	24 hours after removal of foetus
	AST (I.U./L)	66.12±1.11 ^b	70.22±1.39 ^b	66.28±1.36 ^b
	ALT (I.U./L)	44.70±1.85 ^b	51.44±1.87 ^b	47.08±2.73 ^b
	Total protein (gm/dl)	6.92±0.51 ^b	8.0±0.54 ^b	7.17±0.53 ^b

Different superscript (a, b) within a column for a parameter differ significantly ($p<0.05$)

Pattabiraman and Pandit (1980) did not observed any change in the AST activity in buffaloes suffering with uterine torsion. In the treatment group, an increased level of AST and ALT may be attributed to muscle exertion produced by strong abdominal contractions due to uterine torsion nearby parturition or may be due to hepatic dysfunction (Manju *et al.*, 1985).

Serum total protein concentration was significantly lower ($p<0.05$) in the buffaloes that suffered from uterine torsion as compared to control animals. Decline in total protein level has previously been reported in uterine torsion affected buffaloes (Singla *et al.*, 1992; Amer and Hashem, 2008). The hypoproteinemia may perhaps be due to stressful condition (Manju *et al.*, 1985; Sathya *et al.*, 2005) or liver malfunction and negative nitrogen balance because of reduced protein intake (Schonfelder *et al.*, 2003).

It can be concluded that in the uterine torsion the enzymatic activity increases whereas total protein levels decreases which may lead to the stressful condition for the animal. By applying good managemental practices during periparturient period we can minimize the production loss.

REFERENCES

- Amer, H.A. and Hashem, M.A. (2008). Relationship between clinical and biochemical picture of uterine torsion in Egyptian buffaloes (*Bubalus bubalis*). *Int. J. Vet. Med.* **4**: 101-105.
- Ghuman, S.P.S. (2010). Uterine torsion in bovines: a review. *Indian J. Anim. Sci.* **80**: 289-305.
- Hussein, H. and Abd Ellah, M.R. (2008). Effects of dystocia, fetotomy and caesarian sections on the liver enzymes activities and concentrations of some serum biochemical parameters in dairy cattle. *Anim. Reprod. Sci.* **105**: 384-391.
- Kumar, S. (2012). Evaluation of antioxidants status and its modulation in buffaloes affected with dystocia. M.V.Sc. thesis, Lala Lajpat Rai University of Veterinary and Animal Sciences, Hisar, Haryana.
- Manju, T.S., Verma, S.K., Gupta, R.C., Mandokhot, V.M. and Krishnaswamy, A. (1985). Profiles of some plasma biochemical constituents associated with uterine torsion and following its correction by laprohysterotomy in buffaloes. *Indian J. Anim. Reprod.* **6**: 57-61.
- Pattabiraman, S.R. and Pandit, R.K. (1980). Studies on haematological and biochemical constituents in blood of buffaloes with uterine torsion. *Cherion* **2**: 338-341.
- Phogat, J.B. (1987). Biochemical and haematological studies on uterine torsion in buffaloes (*Bubalus bubalis*). M.V.Sc. thesis, Haryana Agricultural University, Hisar, Haryana.
- Sathya, A., Prabhakar, S. and Ghuman, S.P.S. (2005). Effect of dexamethasone administration on cortisol concentration and biochemical profile in buffaloes suffering from dystocia. *Anim. Reprod.* **2**: 233-239.
- Schonfelder, A., Richter, A. and Sobiraj, A. (2003). Prognostic indicators for conservatively incorrectable uterine torsion in the cow. *Tierarztliche Umschau*. **58**: 512-517.
- Singla, V.K., Sharma, R.D., Gandotra, V.K. and Prabhakar, S. (1992). Changes in certain serum biochemical constituents in buffaloes with uterine torsion. *Indian Vet. J.* **69**: 805-807.
- Srinivas, M., Sreenu, M., Lakshmi Rani, N., Subramanyam Naidu, K. and Devi Prasad, V. (2007). Studies on dystocia in graded murrah buffaloes: A retrospective study. *Buff. Bull.* **26**: 450-454.