

Original Research Article

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## Evaluation of Meloxicam as Stress Modulator in Cases of Assisted Parturition in Buffaloes

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### ABSTRACT

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Evaluations of meloxicam as stress modulator in cases of assisted parturition in buffaloes are analyzed. Number of analgesics of NSAID group viz., meloxicam and rofecoxib etc has been used in management of post-operative pain. Fazili (2005) conducted comparative evaluation of meloxicam and rofecoxib in management of post-operative pain in canine orthopaedic cases. Present study has been undertaken on the efficacy of these analgesics in modulation of stress in caesarian section cases in bovines.

### Introduction

Problems at the time of parturition are a cause of great concern to the livestock owner and the veterinarian alike as difficult parturition adds risk to the life of dam and the foetus besides impairment of the production and reproduction capabilities of the dam.

Various procedures employed to relieve dystocia further intensify the stress to an already stressed individual.

Uterine manipulations cause excessive pain to the affected animals.

It is imperative that stress and pain to the dystocia affected dam be minimized by administration of tranquillizers, analgesics etc.

Chlorpromazine and isoxsuprine hydrochloride administration in caesarean operated buffaloes have been evaluated as modulator of stress by Prabhakar *et al.*, (1999a) and Dahiya *et al.*, (2001)

Dystocia is accompanied by several hematological and blood biochemical changes which have a significant bearing on the outcome of the case and may serve as prognostic indicators. In present study we evaluated effect of meloxicam as stress modulator in cases of assisted parturition in buffaloes by evaluating parameters like hematologicals (haemoglobin, PCV) and blood biochemical (blood urea).

### **Materials and Methods**

The present investigation was carried out on 41 dystocia affected buffaloes brought to the teaching veterinary clinics, CCS HAU, Hisar for treatment. Before attempting to relieve the dystocia, a complete history of the case with regard to parity, stage of gestation, duration of problem and previous handling of the case by the field staff/laymen, was obtained from the owner.

The nature and cause of dystocia was determined on the basis of systemic examination and depending upon the cause of difficulty in birth and the duration and previous handling of the case, obstetrical management was carried out. All the animals received routine supportive therapy consisting of parenteral antibiotics, dexamethasone, fluid therapy, hemostatic, uterine stimulants and intrauterine antiseptics post-delivery of the foetus.

### **Grouping on the basis of obstetrical operation**

Group I: comprised of 19 buffaloes in which foetus were removed by Caesarian section without administration of meloxicam prior to surgery.

Group II: comprised of 22 caesarean operated buffaloes treated preemptively with meloxicam.

### **Sampling schedule**

Jugular blood samples were collected by standard venipuncture technique from all the cases before treatment (0hour) and then at 2 hours and 24 hours post-manuevering.

Two ml of blood was drawn in vials containing sodium oxalate for hematological investigations and 20ml was collected in heparinised glass tubes. Hematological studies included determination of haemoglobin (Hb) concentration and packed cell volume (PCV). Haemoglobin concentration was determined by Sahli's method and packed cell volume by micro haematocrit technique as described by Schalm (1975).

For, Biochemical Study, the parameter selected was the blood urea. Blood urea was estimated by GLDH – UREASE method as described by Tiffany *et al.*, (1972).

### **Results and Discussion**

#### **Clinical observation**

The record of clinical observation on 41 dystocia affected buffaloes handled in the present investigation has been presented in figure 1.

#### **Cause of dystocia**

The majority of the cases of dystocia in the present study were maternal in origin. While the maternal dystocia constituted 75.6% percent of the cases, foetal dystocia accounted for only 10 out of 41 cases.

#### **Parity of the dam**

Although the total number of dystocia cases was observed to be more in pleuriparous buffaloes (80.48%) than the primipara (19.52%).

### **Treatment adopted**

Caesarean operation had to be performed to relieve dystocia in all 41 cases.

### **Haematological studies**

Haematological investigation in the present study consisted of estimation of haemoglobin concentration and packed cell volume.

### **Haemoglobin concentration**

Haemoglobin concentration in different groups of dystocia affected buffaloes has been shown in Table 1. The concentration of haemoglobin was found to be significantly ( $p < 0.05$ ) lower at 2 and 24 hours post-treatment in buffaloes treated pre-emptively with meloxicam (Group II).

The concentration decreased from a mean of  $11.818 \pm 0.373$  gm% to  $10.333 \pm 0.223$  gm% at 2 hours post-delivery and was recorded as  $10.550 \pm 0.207$  gm% at 24 hours interval. However, the haemoglobin concentration did not differ significantly between meloxicam administered buffaloes and buffaloes without meloxicam administration at any of the sampling interval.

Significant difference was not detected in hemoglobin level of buffaloes which died or survived following obstetrical intervention in any of the groups. However, slightly higher pre-treatment haemoglobin concentration (i.e. 0 hour value) in buffaloes which could not survive following treatment as compared to those which survived indicated moderate haemo-concentration in the former.

### **Packed cell volume**

The alteration in packed cell volume mimicked the change in haemoglobin concentration in different groups of animals in

the present study. The packed cell volume decreased significantly ( $p < 0.05$ ) from  $36.955 \pm 1.150$  % at 0 hour to  $32.238 \pm 0.690$  % within 2 hours following relief of dystocia in those buffaloes which were administered meloxicam (Table 2) and remained low till 24 hours post-treatment ( $32.850 \pm 0.595$  %). The decrease in packed cell volume in buffaloes without pre-emptive administration of meloxicam, though apparent, was non-significant.

The post-treatment fall in packed volume was significant ( $p < 0.05$ ) in meloxicam administered buffaloes. However, no significant difference was noticed between meloxicam administered and meloxicam un-administered groups of buffaloes at any of the sampling interval.

The packed cell volume did not differ significantly between buffaloes which died or survived after obstetrical treatment whether the animals were administered meloxicam preemptively or not or in caesarean operated buffaloes. However, non-significantly higher pre-treatment packed cell volume values were evident in buffaloes which died than those which survived following treatment of dystocia.

### **Blood urea**

Blood Urea concentration exhibited wide individual variation among different animals but did not vary significantly between different sampling intervals in any of the groups of dystocia affected buffaloes under present report (Table 3). There was no significant difference in Blood Urea concentration between meloxicam treated and untreated buffaloes.

However, the concentration were recorded as significantly ( $p < 0.05$ ) lower at 2 hours post-caesarean ( $30.463 \pm 6.691$  mg/dl).

**Table.1** Effect of pre emptive administration of meloxicam on haemoglobin concentration (gm-%) in dystocia affected buffaloes

Group	Sampling interval Haemoglobin Concentration (gm %)		
	0 hour	2 hours	24 hours
I (n=19)	11.495±0.549	10.421±0.655	10.684±0.697
II (n=22)	11.818±0.373 <sup>a</sup>	10.333±0.223 <sup>b</sup>	10.550±0.207 <sup>b</sup>

Means bearing different superscripts differ significantly (P<0.05) at different interval

**Table.2** Effect of pre emptive administration of Meloxicam on PCV concentration (%) in Dystocia affected buffaloes

Group	Sampling interval PCV Concentration (%)		
	0 hour	2 hours	24 hours
I (n=19)	35.735±1.595	33.368±1.729	33.105±1.981
II (n=22)	36.955±1.150 <sup>a</sup>	32.238±0.690 <sup>b</sup>	32.850±0.595 <sup>b</sup>

Means bearing different superscripts differ significantly at different interval

**Table.3** Effect of pre emptive administration of meloxicam on blood urea in dystocia affected buffaloes

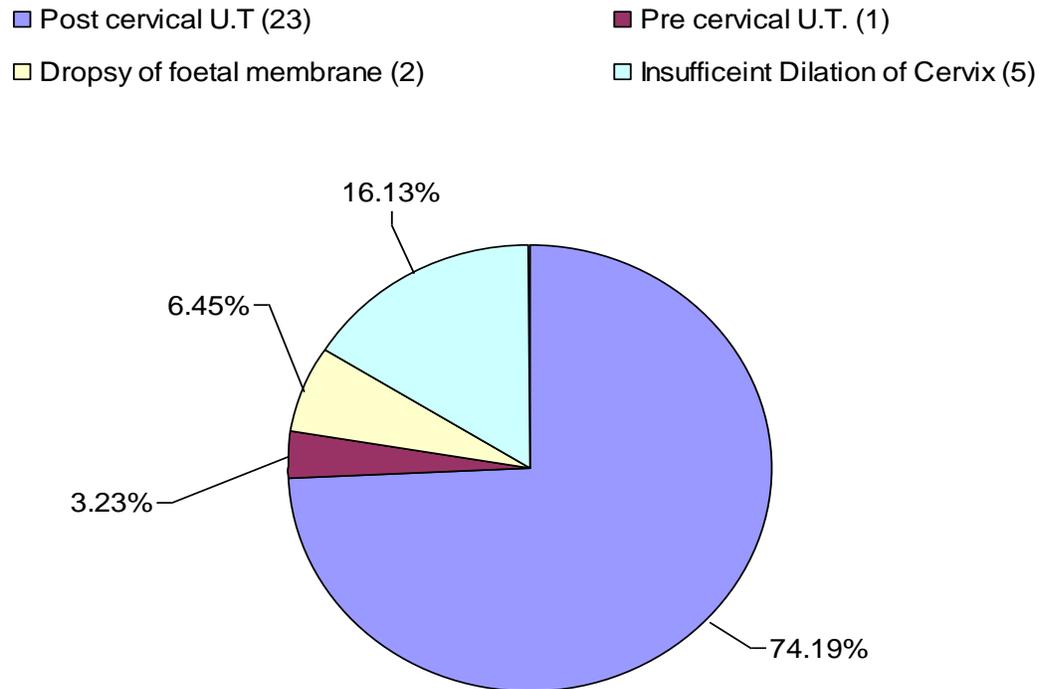
Group	Sampling interval Blood Urea (mg / dl)		
	0 hour	2 hours	24 hours
I (n=19)	45.197 ± 7.456	42.214 ± 6.922	45.345 ± 6.537
II (n=22)	32.101 ± 6.035	32.640 ± 5.012	38.960 ± 8.272

**Table.4** Effect of obstetrical operation on survival of dystocia affected buffaloes

Obstetrical operation	No. of animals	
	Survived	Dead
Caesarean operation (41)	22 (52%)	19 (48%)

**Table.5** Effect of preemptive administration of meloxicam on survival of dystocia affected buffaloes

Group	No. of animals	
	Survived	Dead
Meloxicam treated (22)	11 (50%)	11 (50%)
Meloxicam untreated (19)	13 (68.42%)	6 (31.58%)
Total (41)	24 (58.53%)	17 (41.47%)



**Fig. 1: Causes of maternal Dystocia (n = 31)**

Observations on Blood Urea concentration in relation to survival of buffaloes in different groups revealed that the concentration was not significantly different between those which died and the survived ones though the mean pre-treatment values of Blood Urea appeared to be higher in caesarean operated buffaloes which died subsequently.

### **Survivability V/S treatment**

The data on survival of dystocia affected buffaloes following preemptive administration of meloxicam has been shown in table 5. Only one half of the buffaloes suffering from difficulty in birth survived when the buffaloes had been administered

meloxicam intramuscularly prior to handling of dystocia. The survival rate of the dam was much better (68.42%) when meloxicam was not administered to the dystocia affected buffaloes. Only 52% of the caesarean operated buffaloes survived in the present investigation (Table 4).

The present report is based on investigation on 41 clinical cases of dystocia in buffaloes brought to the teaching Veterinary Clinics of College of Veterinary Sciences, Hisar for treatment. These cases were characterized by pre-ponderance of maternal type of dystocia with torsion of uterus being on the top of the list of causes of dystocia. This observation is in agreement with the earlier reports of Manju

and Verma (1985), Devender Kumar (1991), Prabhakar *et al.*, (1994), Dahiya (1998) and Gagan Gaudi (2004).

Among the uterine torsion cases, the twist in the uterus occurred caudal to cervix in 23 out of 24 cases and in clockwise direction in cent percent cases in the present study. Similar observations have been recorded earlier by Dahiya (1998) and Gagan Gaudi (2004). Several other workers (Vasishta, 1983; Khatri, 1985, Malik, 1986, Siddiquee, 1988, Kumar, 1990; Prabhakar *et al.*, 1994, Srinivas *et al.*, 2007; Amin *et al.*, 2011 and Ali *et al.*, 2011) have also reported that the post-cervical uterine torsion predominates in buffaloes and that the torsion occurs in clockwise direction in more than 95 per cent of cases.

Torsion of 180° was more frequently encountered in the present study than torsions of other degrees. This is in tune with the observations of Singla (1988), Siddiquee (1988), Kumar (1990), Devender (1991) Matharu and Prabhakar (2001), Amin *et al.*, (2011); Ali *et al.*, (2011) and Purohit *et al.*, (2011a,b). However, Dahiya (1998) in his study found higher frequency of more than 180° torsions than torsions of 180° or less than that.

Contrary to this Chothani (1972) and Mannari and Tadmok (1976) recorded equal frequency of uterine torsion cases with 90°, 180°, 270° and 360° and above in surti buffaloes. Among the foetal dystocia cases, faulty disposition of foetus was found to be the most common anomaly. Taleb Khan (2005) reported that the incidence of dystocia due to faulty disposition is influenced by the age of the dam, highest incidence being in the younger dams or first calvers.

Though the pleuriparous buffaloes outnumbered the primipara in dystocia cases, parity was not found to influence the

occurrence of dystocia as equal number of cases were recorded in second or fourth calvers. Devender *et al.*, (1995) and Dahiya (1998) recorded identical observation in torsion affected buffaloes.

In majority of the cases in the present study the foetus was found to be dead. This is both due to the high mortality rate in cases of torsion of uterus in buffaloes as reported by Vasishta (1983), Agarwal (1987), Prabhakar *et al.*, (1994) and Dahiya (1998) and also because of the delay in reporting the case to the veterinary clinics.

Hematological investigation in the present study revealed that the haemoglobin concentration and packed cell volume were not significantly different between the meloxicam treated and untreated buffaloes at any of the sampling intervals.

Significant ( $P < 0.05$ ) fall was recorded in packed cell volume and haemoglobin concentration within 2 hours of obstetrical treatment in meloxicam administered buffaloes and the value remained lower than the pre-treatment values till 24 hours post treatment.

Estimation of blood urea concentration in meloxicam administered dystocia affected buffaloes revealed that the pre-emptive administration of meloxicam had no significant effect on blood urea concentration as significant difference was not detected in blood urea concentration between meloxicam treated and untreated buffaloes.

Preemptive administration of meloxicam prior to obstetrical intervention in dystocia affected buffaloes is not effective in modulating the stress in these animals. Caesarean operation is less conducive to the survivability of dam in comparison to the non-surgical obstetrical procedures.

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