SHORT COMMUNICATION

Clinical Study of Incomplete Cervical Dilation in Dairy Cattle and Buffaloes

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Abstract

A total of 17 clinical cases of cows and buffaloes suffering from incomplete cervical dilation (ICD) were included in the study. Among these cases, 35.29% and 64.71% cases were observed in cows and buffaloes, respectively. Pluripara were more affected as compared to primiparous animals. Treatment procedures adopted in these cases were mechanical manipulation of the cervix and a combination of four drugs ($PGF_2\alpha$, Betamethasone, Estrogen, and Valethamate bromide). All the animals responded to the treatment protocol. The combined hormonal treatment ($PGF_2\alpha$, Betamethasone, Estrogen, and Valethamate bromide) was suitable for managing incomplete cervical dilation.

Keywords: Betamethasone, Bovine, Estrogen, Incomplete cervical dilation, $PGF_2\alpha$, Valethamate bromide.

Ind J Vet Sci and Biotech (2021): 10.21887/ijvsbt.17.2.21

Introduction

In cattle and buffaloes, incomplete cervical dilation (ICD) is one of the major causes of dystocia. The failure of the cervical ring to relax entirely during calving leads to retention of the fetus in utero and causes dystocia. The cows and buffaloes are more prone to ICD than other species due to the more cartilaginous cervix (Sloss and Dufty. 1980). ICD is common in primigravida cows with an incidence of 11.12% to 16.70% (Wehrend and Bostedt, 2003). However, Purohit *et al.* (2011) found the incidence of incomplete cervical dilation in cattle and buffaloes as 5.1%. This communication reports successful clinical management of 17 cases of ICD in cattle and buffaloes.

Materials and Methods

A total of 17 clinical cases of cows and buffaloes suffering from ICD presented for treatment to the Department of Veterinary Obstetrics and Gynaecology College of Veterinary Science and Animal Husbandry , DUVASU, Mathura over three years were included in this study. General history included the age of dam, parity, previous calving history, and assistance provided before the clinics. Basic clinical parameters including temperature, pulse, and respiration rate were also recorded. Three treatment procedures adapted were (i) mechanical manipulation of the cervix (n=3, cattle-1 and buffalo-2), (ii) use of combined hormonal treatment $PGF_2\alpha$, Estrogen, Betamethasone and Valethamate bromide (n=12, cattle-4, and buffalo-8), and (iii) hormonal treatment, except $PGF_2\alpha$ in one cattle and one buffalo.

Results and Discussion

Incomplete dilation of cervix in cows and buffaloes

Among the cases presented, 6 (35.29%) were cows, and 11 (64.71%) were buffaloes. Out of six cases in cattle, 4 (66.67%), 1 (16.67%), and 1 (16.67%) were in the age group of 5-7, 2-4, and >7 years, respectively. However, 1 (16.67%) and 5 (83.33%) cases were primipara and pluripara cows, respectively. Amongst the pluripara cows 1 (20%), 3 (60%), and 1 (20%) fell in the parity range of 2-4, 5-7, and >7, respectively. Amongst the pluripara cows, 5 (83.33%) had an earlier history of normal calving, while one (16.67%) had a history of dystocia. Among 6 cattle, one was provided veterinary assistance before being brought to clinics.

Out of eleven cases in buffaloes, 8 (72.72%), 1 (9.09%), and 2 (18.18%) were in the age group of 5-7, 2-4, and > 7 years, respectively. However, 1 (9.09%) and 10 (90.91%) were primipara and pluripara buffaloes, respectively. Amongst

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How to cite this article: Sagar, R., Saxena, A., Kumar, S., & Kumar, S. (2021). Clinical Study of Incomplete Cervical Dilation in Dairy Cattle and Buffaloes. Ind J Vet Sci and Biotech, 17(2): 102-104.

Source of support: Nil

Conflict of interest: None.

Submitted: 21/11/2020 **Accepted:** 21/05/2021 **Published:** 25/06/2021

Table 1: Basic clinical parameter recorded in cows and buffaloes suffering from dystocia due to incomplete dilation of cervix

Body condition		*Temperature (°F)*	*Pulse (per minute)*	*Respiration (per minute)*
Cows	Good (n=4)	101.3 ± 0.096 (101-102.6)	80.8 ± 0.82 (72-86)	50.80 ± 0.70 (42-56)
	Fair (n=1)	103.0	86	56
	Poor (n=1)	103.2	86	56
Buffaloes	Good (n=8)	101.64 ± 0.09 (101-102.4)	75.63 ± 0.63 (70-84)	35.61 ± 0.39 (30-40)
	Fair (n=2)	102.85 ± 0.049 (102-104)	84.2 ± 0.64 (82-86)	51.00 ± 0.87 (48-54)
	Poor (n=1)	104	86	56
General Status		*Good*	*Fair*	*Poor*
Cows	--	4(66.66%)	1(16.67%)	1(16.67%)
Buffaloes	--	9(81.82%)	1(09.09%)	1(09.09%)

Table 2: Summary of cases of dystocia in cows and buffaloes treated for incomplete dilation of cervix

		Incomplete Dilation of Cervix	
S. No.	*Attributes*	*Cows*	*Buffaloes*
1.	No. of cases handled	6	11
2.	Degree of Dilation:		
	≤2 Finger dilation	3 (50.00%)	8 (72.73%)
	≤3 Finger Dilation	2 (33.33%)	2 (18.18%)
	≥3 Finger Dilation	1 (16.67%)	1 (9.09%)
3.	Status of cervix and their adjacent area:		
	Soft	6 (100.00%)	11 (100.00%)
	Hard and Leathery	Nil	Nil
4.	Strategies adopted for dilation of cervix:		
	(i) Mechanical manipulation	1 (16.67%)	2 (18.18%)
	(ii) Hormone ($PGF_2\alpha$+Betamethasone + EstradiolValerate + Valethamate Bromide)	4 (66.66%)	8 (72.73%)
	(iii) All hormone, except $PGF_2\alpha$	1 (16.67%)	1 (9.09%)
5.	Treatment Result: All responded	6 (100.00%)	11(100.00%)
6.	Status of birth canal following delivery:		
	Mild rupture	4 (66.66%)	10 (90.91%)
	Appreciable rupture	2 (33.33%)	1 (9.09%)
7.	Status of fetus delivered:		
	Live	5 (83.33%)	9 (81.82%)
	Dead	1 (16.67%)	2 (18.18%)

the pluripara buffaloes, 1 (10%), 8 (80%), and 1(10%) fell in the parity range of 2-4, 5-7, and >7, respectively. Amongst the pluripara buffaloes, 8 (72.72%) had an earlier history of normal calving, while three (27.28%) had a history of dystocia. In these cases, 3 (27.28%) had been provided veterinary assistance before brought to clinics.

In these cases, body temperature and respiration rate were increased in cattle, and most of the animals' general condition was good (Table 1).

In all 17 animals, cervix and adjoining area were found soft on palpation. On vaginal examination of 6 cases of ICD in cows, 3 (50%) were having ≤ 2 finger dilation, 2 (33.33%) were having a ≤ 3 finger dilation, while one was having >3 fingers dilation (Table 2). Out of 6 cases, 1 (16.67%), 4 (66.66%), and 1 (16.67%) were treated by mechanical manipulation, a combination of four drugs ($PGF_2\alpha$, Betamethasone, Estrogen, and Valethamate Bromide), any combination of the above drugs, except $PGF_2\alpha$, respectively. After treatment, assisted delivery in all the six animals was attempted. There were a mild rupture of the birth canal in 2 (33.33%) cases. In cows, 5 (83.33%) live and 1 (16.67%) dead fetus was delivered.

On vaginal examination of 11 cases of ICD in buffaloes, 8 (72.73%) were having ≤ 2 finger dilation, 2 (18.18%) were having a ≤ 3 finger dilation, while one was having >3 fingers dilation (Table 2). Out of 11 cases, 2 (18.18%), 8 (72.73%), and 1 (9.09%) were treated by mechanical manipulation, the combination of four drugs ($PGF_2\alpha$, Betamethasone, Estrogen, and Valethamate Bromide) and combination of the above drugs, except $PGF_2\alpha$, respectively. After treatment, assisted delivery in all the eleven animals was attempted. There

was a mild rupture of the birth canal in 10 (90.91%) cases. In buffaloes, 9 (81.82%) live fetuses and 2 (18.18%) dead fetuses were delivered.

Incomplete cervical dilatation is an important cause of maternal dystocia among farm animal species (Noakes *et al.,* 2009). Cervical dilatation is a key event for the successful vaginal delivery of young ones. Failure of cervical dilatation occurs due to alterations in the cervical ripening mechanism or insufficient uterine contraction. Cervical ripening is a multifactorial process, an outcome of hormonal regulation, inflammatory process, and enzymatic breakdown of collagen.

In the present study, the use of $PGF_2\alpha$ along with valethamate bromide, corticosteroid, and estrogen successfully dilated the cervical canal in the cattle (Mishra *et al.,* 2004). Das *et al.* (2008) treated the ICD with the use of $PGF_2\alpha$ along with valethamate bromide. The cervical dilatation recorded after administering valethamate bromide might be due to its neurotropic (anticholinergic) and papaverine-like action on the cervical smooth muscles (Sharma *et al.,* 1990). Present communication again confirms some previous observations (Mishra *et al.,* 2004; Sharma *et al.,* 1990) regarding the beneficial effects of valethamate bromide along with $PGF_2\alpha$ for successful correction of dystocia due to incomplete dilatation of cervix in bovine.

From the present study, it can be concluded that the incidence of incomplete cervical dilation is more in pluripara than primipara cattle. A combination of four drugs ($PGF_2\alpha$, Betamethasone, Estrogen and Valethamate bromide) can be used to dilate the cervix in delayed cases of parturition due to ICD in cattle.

Acknowledgement

The authors acknowledge the Dean, Veterinary College, Mathura, Uttar Pradesh, for the support for this study.

References

Das, G.K., Ravinder, R.D., Deori, S., Pradeep, J., Kumar, P., & Gokuldas, P.P. (2008). Incomplete cervical dilatation causing dystocia in a buffalo. *Indian Journal of Veterinary Research*, *17*(2), 41-43.

Mishra, S., Singh, M., Thakur, S., Sharma, A., & Vasistha, N.K. (2004). Management of incomplete cervical dilatation in an aborting cow – A case report. *Intas Polivet*, *5*, 154-155.

Noakes, D.E., Parkinson, T.J., & England, G.C.W. (2009). *Veterinary Reproduction and Obstetrics*. 9th ed. W.B. Saunders Company Ltd. London, p. 133.

Purohit, G.N., Barolia, Y., Shekher, C., & Kumar, P. (2011). Maternal dystocia in cows and buffaloes: A review. *Open Journal of Animal Science*, *1*, 41-53.

Sharma, G.P., Sudhir Chandra Reddy, V., & Satyanarayana Raju, M. (1990). Effect of Valosin–Vet (Valethamate Bromide) in cervical dystocia. *Indian Veterinary Journal*, *67*, 681-582.

Sloss, V., & Dufty, J. (1980). *Handbook of Bovine Obstetrics*. Williams and Wilkins, London, p. 98-127.

Wehrend, A., & ostedt, H. (2003). The incidence of cervical dystocia and disorders of cervical involution in the postpartum cow. *Deutsche Tierarzlithe Wochen-schrift*, *110*, 483-486.