aJava

Asian Journal of Animal and Veterinary Advances

Academic
Journals Inc.

www.academicjournals.com

Asian Journal of Animal and Veterinary Advances 7 (10): 1049-1054, 2012
ISSN 1683-9919 / DOI: 10.3923/ajava.2012.1049.1054

Incidence of Calf Diarrhea in Cattle and Buffalo Calves in Uttar Pradesh, India

[1]Subhash Malik, [2]Amit Kumar Verma, [3]Amit Kumar, [3]M.K. Gupta and [1]S.D. Sharma
[1]Department of Veterinary Clinical Medicine, [2]Department of Veterinary Epidemiology and Preventive Medicine, [3]Department of Veterinary Microbiology and Immunology, College of Veterinary Science and Animal Husbandry, U.P. Pandit Deen Dayal Upadhayay Pashu Chikitsa Vigyan Vishvidhyalaya Evum Go-Anusandhan Sansthan, Mathura, 281001, Uttar Pradesh, India

Corresponding Author: Subhash Malik, Department of Veterinary Clinical Medicine, College of Veterinary Science and Animal Husbandry, U.P. Pandit Deen Dayal Upadhayay Pashu Chikitsa Vigyan Vishvidhyalaya Evum Go-Anusandhan Sansthan, Mathura, 281001, Uttar Pradesh, India

ABSTRACT

Diarrhea in farm animals, especially in neonatal calves is one of the most challenging clinical syndromes encountered by practicing large animal's veterinary practitioners. The objectives to study the prevalence of diarrhea cases in cattle and buffalo calves during the period of study (April, 2008-March, 2009) from the cases brought to TVCC, DUVASU, Mathura and district veterinary hospitals of North West UP; to compare the incidence rate of calf diarrhea in cattle and buffalo calves. Out of total 930 cases of calves recorded (from seven different government veterinary hospitals located in north west UP viz., Saharanpur, Muzaffarnagar, Baghpat, Meerut, Gautam Budh Nagar, Ghaziabad and teaching veterinary clinical complex (TVCC), DUVASU, Mathura) during the period, 499 (53.66%) were of calf diarrhea. The incidence rate of calf diarrhea ranged between 48.68% (Meerut) to 57.68% (TVCC, DUVASU, Mathura). Out of these 930 sick cases, 572 (61.50%) were of buffalo calves, which differ significantly ($p<0.05$) in comparison to 358 (38.5%) cattle calves. The incidence rate of calf diarrhea in cattle calves (52.51%) was almost similar to the incidence rate in buffalo calves (54.37%). Statistically, there was no significant difference with regards to monthly distribution of diarrhea cases. However, there was significant difference in the incidence of calf diarrhea between winter and summer months. The maximum number of calf diarrhea cases were reported after the onset of rains and continued till the end of winter and autumn, which appears to be related to post calving season and climatic stress.

Key words: Diarrhoeal incidence, cattle calf diarrhea, buffalo calf diarrhea, Uttar Pradesh, India, seasonal effect

INTRODUCTION

Livestock is an integral part of the agricultural production system in India and plays an important role in national economy as well as in socio-economic development of millions of rural household. The contribution of Agriculture and allied sectors is approximately 17.5% of GDP of India. Calf is the back bone of the dairy industry. White Revolution will be meaningless if the calf dies away unchecked in great number. The morbidity and mortality rate are higher in young ones than any other age group and the prevention of losses among them needs, therefore, special attention. Since the past few years, dairy farming is facing serious economic problems due to calf mortality/morbidity and to overcome this handicap, each calf must be healthy and remains that way

throughout its growing life (Khan and Khan, 1991). New born farm animals suffer fairly higher mortality than their adult counterparts and it is one of major reprisal over economy in livestock Industry. Diarrhoea in farm animals, especially in neonatal calves is one of the most challenging clinical syndromes encountered by practicing large animal's veterinary practitioners. Diarrhoea is a leading cause of economic losses to the cattle industry and major cause of calf mortality and morbidity during first few weeks of life in most countries (Radostits *et al*., 2000). The economic losses occur not only from mortality but also from treatment costs and time spent on care as well as subsequent chronic ill thrift and impaired growth performance (Bazeley, 2003). Calf diarrhoea is characterized by passage of soft fluid faeces, abnormal colour of faeces (white to yellow green), loss of weight rapidly, becoming lean and major metabolic disturbances including dehydration and metabolic acidosis (Tennant *et al*., 1972; Grove-White and White, 1999), amenable to both oral and parenteral fluid therapy. Looking into the intricacy of calf diarrhoea the study was planned to study the prevalence of diarrhea cases in cattle and buffalo calves during the period of study (2008-2009) from the cases brought to college clinic and district veterinary hospitals of north west UP.

MATERIALS AND METHODS

The present study was undertaken on calves up to three months of age exhibiting symptoms of diarrhoea at teaching veterinary complex, DDD farm, DUVASU, Mathura, Gaushalas at Vrindavan, Mathura, Veterinary Hospitals of district Muzaffarnagar, Baghpat, Meerut, Gautam Budh Nagar, Ghaziabad and Saharanpur.

The clinical reports of the hospitals were also screened from April, 2008 to March, 2009 to find out the current status of calf diarrhea in Northwest Uttar Pradesh. Total cases of ill calves of cow and buffaloes were accounted and numbers of cases of diarrhea were calculated as percentage to find the morbidity rates. To assess the species variation in cases of calf diarrhea, the difference between total number of cases of cattle and buffalo calves were also studied. The data obtained were statistically analyzed as described by Snedecor and Cochran (1975). Mean and standard were calculated and the data were subjected to test of significance (t-test).

RESULTS

The total number of sick calves reported to the hospitals during this period (2008-09) was recorded (Table 1). Out of total 930 cases recorded during the period, 499 (53.66%) were of calf

Table 1: Overall incidence of calf diarrhea as recorded in some govt. veterinary Hospitals of North-West Uttar Pradesh during 2008-09

	Total calves	
Particulars	No. of sick	No. of diarrheic (%)
Teaching Veterinary Clinical Complex, Mathura	267	154 (57.68)
Baghpat	93	50 (53.76)
Gautam Budh Nagar	85	48 (56.47)
Ghaziabad	114	62 (54.38)
Meerut	152	74 (48.68)
Muzaffarnagar	117	58 (49.57)
Saharanpur	102	53 (51.96)
Total	930	499 (53.66)

diarrhea. The incidence rate of calf diarrhea ranged between 48.68% (Meerut) to 57.68% (TVCC, DUVASU, Mathura). There was no significant difference between incidence rate of calf diarrhea among different locations and areas under-study.

Out of 930 sick cases reported in year 2008-09, 572 (61.50%) were of buffalo calves, which differ significantly ($p<0.05$) in comparison to 358 (38.5%) cattle calves (Table 2). The incidence rate of calf diarrhea in cattle calves (52.51%) was almost similar to the incidence rate in buffalo calves (54.37%). There was no significant difference between incidence rate of diarrhea in cow and buffalo calves.

The month wise distribution of calf diarrhea in cattle and buffaloes has been depicted in Table 3, Fig. 1 and 2. From the data, it is revealed that in both the species, maximum number of calf diarrhea cases were reported after the onset of rains and continued till the end of winter and autumn, which appears to be related to post calving season and climatic stress. Statistically also, there was no significant difference with regards to monthly distribution of diarrhea cases in both species. However, there was significant difference in seasonal incidence of calf diarrhea between winter (Nov, Dec. and Jan.) and summer (May, June and July) months.

Table 2: Species-wise incidence of calf diarrhea as recorded in some govt. veterinary hospitals of North-West Uttar Pradesh during 2008-09

	Cattle calves		Buffalo calves	
Particulars	No. of sick	No. of diarrheic	No. of sick	No. of diarrheic
Teaching veterinary complex, Mathura	118	70 (59.32)	149	84 (56.38)
Baghpat	41	21 (51.21)	52	29 (55.77)
Gautam Budh Nagar	23	12 (52.17)	62	36 (58.06)
Ghaziabad	41	22 (53.66)	73	40 (54.79)
Meerut	55	26 (47.27)	97	48 (49.48)
Muzaffarnagar	39	18 (46.15)	78	40 (51.28)
Saharanpur	41	19 (46.34)	61	34 (55.73)
Total	358 (38.50)*	188 (52.51)	572 (61.50)*	311 (54.37)

Figures in parenthesis are values in percentage, *Values differ significantly at $p<0.05$

Table 3: Month-wise incidence of calf diarrhea as recorded in some govt. veterinary hospitals of North-West Uttar Pradesh during 2008-09

Months	Diarrheic cattle calves	Diarrheic buffalo calves	Total diarrheic calves
January	17*	35*	52*
February	28	38	66
March	20	33	53
April	2	5	7
May	1*	4*	5*
June	4*	3*	7*
July	2*	7*	9*
August	20	28	48
September	22	33	55
October	25	37	62
November	20*	41*	61*
December	27*	47*	74*
Total	188	311	499

*Values differ significantly at $p<0.05$

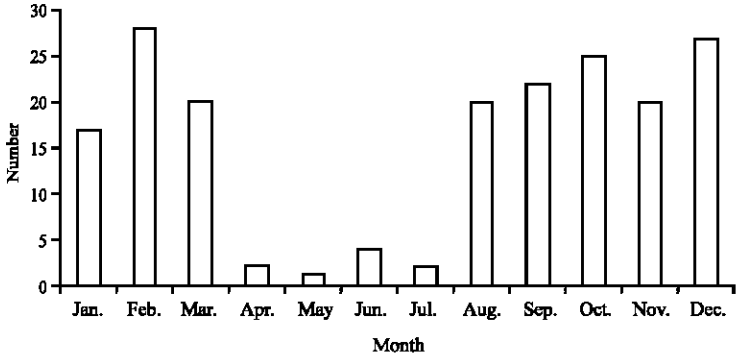

Fig. 1: Month-wise incidence of cattle calves diarrhea as recorded in some govt. veterinary hospitals of north-west Uttar Pradesh during 2008-09

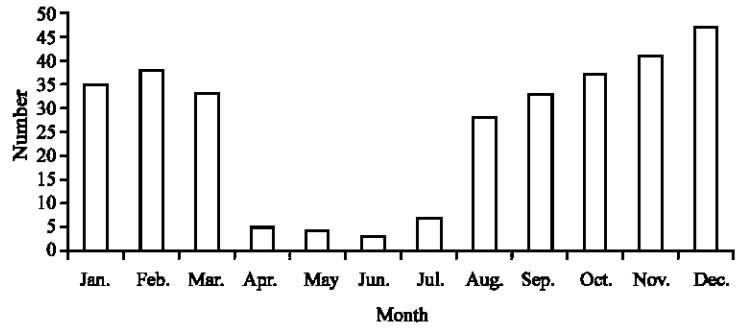

Fig. 2: Month-wise incidence of buffalo calves diarrhea as recorded in some govt. veterinary hospitals of north-west Uttar Pradesh during 2008-09

DISCUSSION

The total number of calf illness cases reported to the hospitals during the period of 2008-09 was recorded (Table 1). Out of total 930 cases recorded during the period, 499 (53.66%) were of calf diarrhea. The number of diarrheic calves was alarming and also of great concern. The significant number of diarrheic calves itself showed the importance of disease and its impact on economy. The incidence rate of calf diarrhea ranged between 48.68% (Meerut) to 57.68% (Kothari Veterinary Hospital, Mathura). Singh and Singh (1973). reported about 50% morbidity and 61.04% mortality in calves which are in proximity to our findings. The variation of incidence of calf diarrhea among different districts might be because of awareness among owners; managemental practices adopted in particular area and the level of education of animal owners (Radostits *et al*., 2000).

To assess the species variation in cases of calf diarrhea, the difference between total number of cases of cattle and buffalo calves were also studied. Out of 930 cases reported in year 2008-09, 572 were of buffalo calves (61.50%) in comparison to 358 (38.5%) cattle calves. It may be because of variation in animal population as the buffaloes are reared more in number than cattle and /or increased susceptibility of buffalo calves than cow calves (Srivastva, 1980). Moreover, It also indicated that buffalo calves were more vulnerable to morbid conditions than cow calves in early post natal life. The incidence of calf diarrhea in calves of cattle and buffalo below three months of age was higher in winter months (October to February). This might be correlated with the post-calving season, climatic stress and poor immunological status in early life (Fredriksen *et al*., 1999;

Singh and Singh, 1973). The morbidity rate of calf diarrhea out of total sick calves did not differ significantly between cow and buffalo species. In cow out of 358 sick calves, 188 (52.51%) and in buffalo out of 572 sick calves, 311 (54.37%) were suffering from diarrhea. These findings are in accordance with earlier studies conducted by Srivastva (1980) and Singh (1973).

In spite of the complex etiology of calf diarrhoea, still bacterial infections are probably responsible for 50% cases of diarrhoea in neonatal calves (Boyd *et al*., 1974) and these can be taken care of by providing better managemental practices and timely cure of the conditions (Radostits *et al*., 2000). Moreover, it has been reported from infant (Alikhani *et al*., 2006), goats (Haque *et al*., 2007). *Escherichia coli*, main diarrhea causing bacteria also has been reported from urinary tract infection in woman than man (Shahina *et al*., 2011), all tissues, body fluids and bone marrow in a Holstein-Friesian calf (Seyed *et al*., 2011), rainwater (Akharaiyi *et al*., 2007), fresh and raw milk (Mohamed and El-Zubeir, 2007), raw and pasteurized milk (Shojaei and Yadollahi, 2008), sweet dishes (Tambekar and Bhutda, 2006), Poultry products (Apata, 2009), municipal water supplies (Shamabadi and Ebrahimi, 2007). Adzitey *et al*. (2012) reported ducks like other farm animals as primary reservoirs for *Escherichia coli* including potential pathogenic types. However, Apun *et al*. (2011) reported much wildlife free from *E. coli* particularly for *E. coli* O157:H7 in Malaysia. Simultaneously resistance against single use of antibiotics is very common so combination therapy is recommended (Shrivastava *et al*., 2009). Thus opportunity for cross contamination and consequently foodborne poisoning or illness exists through the consumption of contaminated food and to avoid the exposure of all these possible cause of infection good management practices have to be adopted and this need a composite campaign against calf diarrhea for the awareness of animal owners.

As the study revealed that buffalo calves are more prone to calf diarrhea, it can be overcome by providing adlib colostrums supply and nutritional supplements along with preventing the cold exposure as the calving season is rainy to winter season that makes them more vulnerable.

ACKNOWLEDGMENTS

The authors are thankful to Dean, College of Veterinary Sciences and Hon'ble Vice Chancellor of the University for providing all the facilities to conduct the study. The assistance of all the hospital staff including TVCC, is highly acknowledged.

REFERENCES

Adzitey, F., C.Y. Liew, A.P. Aronal and N. Huda, 2012. Isolation of *Escherichia coli* from ducks and duck related samples. Asian J. Anim. Vet. Adv., 7: 351-355.

Akharaiyi, F.C., T.T. Adebolu, D.E. Akponmendaye and F.O. Omoya, 2007. Antibiotics assay pattern of *Escherichia coli* isolates from rainwater in Ondo state, Nigeria. Int. J. Biol. Chem., 1: 179-183.

Alikhani, M.Y., A. Mirsalehian and M.M. Aslani, 2006. HeLa-cell adherence patterns of enteropathogenic *Escherichia coli* strains isolated from faecal samples. Pak. J. Biol. Sci., 9: 1465-1469.

Apata, D.F., 2009. Antibiotic resistance in poultry. Int. J. Poult. Sci., 8: 404-408.

Apun, K., K.L. Kho, Y.L. Chong, F.H. Hashimatul and M.T. Abdullah *et al*., 2011. Detection of *Escherichia coli* O157:H7 in wildlife from disturbed habitats in Sarawak, Malaysia. Res. J. Microbiol., 6: 132-139.

Bazeley, K., 2003. Investigation of diarrhoea in the neonatal calf. Practice, 25: 152-159.

Boyd, J.W., J.R. Baker and A. Leyland, 1974. Neonatal diarrhoea in calves. Vet. Rec., 95: 310-313.

Fredriksen, B., T. Sandvik, T. Loken and S.A. Odegaard, 1999. Level and duration of serum antibodies in cattle infected experimentally and naturally with bovine viral diarrhea virus. Vet. Rec., 30: 111-114.

Grove-White, D.H. and D.G. White, 1999. Abdominal distention in collapsed diarrhoeic calves: Biochemical findings and treatment. Vet. Rec., 144: 639-642.

Haque, M.M., M. Ershaduzzaman, M. Emdadul Islam, T. Das and M.M. Rahman, 2007. Isolation and identification of etiological agents from diarrhoeic goats. Asian J. Anim. Vet. Adv., 2: 1-8.

Khan, A. and M.Z. Khan, 1991. Aetiopathology of neonatal calf mortality. J. Islamic Acad. Sci., 4: 159-165.

Mohamed, N.N.I. and I.E.M. El-Zubeir, 2007. Evaluation of the hygienic quality of market milk of Khartoum State (Sudan). Int. J. Dairy Sci., 2: 33-41.

Radostits, O.M., D.C. Blood and G.C. Gay, 2000. Veterinary Medicine: A Text Book of the Diseases of Cattle, Sheep, Pigs, Goats and Horses. 8th Edn., W.B. Saunders Company, Philadelphia, London.

Seyed, Z.B., S.S. Tabrizi and G.R. Abdollahpour, 2011. Stomatocytosis in the ruminant: A first report. Asian. J. Anim. Vet. Ad., 6: 1089-1093.

Shahina, Z., M.J. Islam, J. Abedin, A.H.M.I. Chowdhury and M. Arifuzzaman, 2011. A study of antibacterial susceptibility and resistance pattern of *E. coli* causing urinary tract infection in Chittagong, Bangladesh. J. Bio. Sci., 4: 548-555.

Shamabadi, N. and M. Ebrahimi, 2007. Use of bacterial indicators for contamination in drinking water of Qom, Iran. J. Applied Sci., 7: 2456-2461.

Shojaei, Z.A. and A. Yadollahi, 2008. Physicochemical and microbiological quality of raw, pasteurized and UHT milks in shops. Asian J. Scientific Res., 1: 532-538.

Shrivastava, S.M., S. Kumar and M. Chaudhary, 2009. Ceftriaxone-sulbactam combination: Microbial analysis by variation of ratios and comparative disc diffusion. Curr. Res. Bacteriol., 2: 50-55.

Singh, B.B. and B.P. Singh, 1973. Mortality rate in relation to birth weight of Haryana calves. Ind. Vet. J., 50: 164-166.

Singh, O.P., 1973. Clinico-therapeutic studies of scour and ascariosis in zebu and buffalo calves with a note on non specific dermatitis in cow calves. M.Sc. Thesis, Veterinary College Mathura, India.

Snedecor, G.W. and W.G. Cochran, 1975. Statistical Methods. Oxford and IBH, New Delhi.

Srivastva, A.K., 1980. Calf mortality incidence, clinic-pathological and pharmacological studies. M.Sc. Thesis, CSA University, Kanpur.

Tambekar, D.H. and S.A. Bhutda, 2006. Prevalence of bacterial pathogens in pedha (A Milk Product) sold in amravati (India). Int. J. Dairy. Sci., 1: 32-35.

Tennant, B., D. Harrold and M. Reina-Guerra, 1972. Physiologic and metabolic factors in the pathogenesis of neonatal enteric infections in calves. J. Am. Med. Assoc., 161: 993-1007.