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Incidence of surgical abdominal disorders in calves of Kashmir valley

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Abstract

Five year retrospective study spanning from January 1st 2013 to 31st December 2017, and one year prospective study of complete calendar year 2018, conducted on surgical abdominal disorders in calves presented to Division of Veterinary Clinical Complex (DVCC), SKUAST-K Shuhama (J&K) revealed its 25% hospital incidence in crossbred calves of Kashmir valley. Male calves (45.45%) were found more affected than female calves, with ruminating calves showing highest incidence.

Keywords: Abdominal surgical disorders, Calf mortality, Incidence, Intestinal obstruction, Kashmir valley, Ultrasonography

Introduction

Calf mortality is major cause of economic losses in livestock production. Calf mortality of 20% can reduce the net profit by 40% (Blood and Rasdostits 1989) [2]. Neonatal calf mortality in India varies from 12.5 to 30% (Verma *et al.*, 1980) [19]. Highest calf mortality (80-90%) occurs in the first month especially during the third week of life (Singh *et al.*, 2009 [18] and Jenny *et al.*, 1981 [9]). Mortality is more common in calves with surgical problems (Jonathan and Jerry, 1987) [10]. Abdominal problems, in young calves, form one of the major causes of calf mortality and disability. The disorders range from congenital defects of abdomen, abdomen distension to umbilical enlargement (Bradford, 2005) [3]. Young calves are more affected with surgical abdominal disorders than medical study abdominal disorders in calves of eight days of age had a 73% incidence of lesions which required surgical therapy (Jonathan and Jerry, 1987) [10]. Perusal of scanned literature revealed that no planned study has ever been taken on surgical abdominal disorders in calves of Kashmir valley. The study was thus contemplated to work out the incidence of abdominal surgical disorders in calves with a sole objective to provide a base line data for the researchers to plan future studies for safeguarding the health of young calves.

Materials and Methods

The study was conducted in two phases at Divisions of Veterinary Surgery and Radiology (VSR) and Veterinary Clinical Complex (VCC) Faculty of Veterinary Sciences and Animal Husbandry (F. V. Sc. & A. H.) Shuhama, SKUAST Kashmir. In phase first, five year retrospective study was conducted on surgical abdominal disorders in calves. The study material was the case records of the calves suffering from abdominal affections presented to the VCC for treatment during the 5year period spanning from 1st January 2013 to 31st December 2017. During second phase prospective incidence of abdominal surgical affections in calves was calculated for the period of one year from 1st Jan 2018 to 31st Dec 2018 on the cases presented for treatment at VCC. The incidence was calculated by dividing number of calves actually suffering from surgical abdominal disorders to the total calves registered for the treatment. The results were evaluated on percentage basis.

Results

Retrospective Incidence

In total 1117 calves of either sex, different age groups and breeds were presented for treatment at Division of Veterinary Clinical Complex (VCC) during 5 years period. Of these calves 592 (52.9%) were suffering from different medical conditions and rest 525 (47%) were suffering

from surgical conditions. Of all 1117 cases 286 calves were sufferings from various surgical abdominal conditions, thus giving out hospital incidence of surgical abdominal conditions in crossbred calves of Kashmir valley 25.6% (Table 1; Fig 1.). Male calves (163; 57%) were found more affected with surgical abdominal conditions as compared to female calves (123; 43%) [Table 2 and Fig 2]. Ruminating calves of above 3 months age were seen to be most affected (130; 45.5%) from surgical abdominal disorders followed by pre- ruminant calves of above 1 month age (105; 38%). Neonatal calves were least affected (51; 18%). [Table 3 and Fig 3]. Perusal of data presented in Table 4 and depicted in Fig 4 indicated that abdominal wall affections (101; 35.3%) were most prevalent followed by gastrointestinal surgical affections (88; 30.7%), urinary tract affections (78; 29.2%) and liver affections (14; 4.9%). Spleen was found least affected (05; 1.74%). Year wise distribution of surgical abdominal disease in calves did not follow any regular pattern. The highest incidence was seen in year 2013 (26%) and least in 2014 (16%) [Table 7 and Fig 8]. Surgical abdominal disorders showed highest incidence in summer season (94; 33%) followed by autumn (83; 29%) and spring (78; 27%). Least incidence (31; 12%) was seen in winter. [Table 8 and Fig 9]

Table 1: Incidence of surgical abdominal conditions in calves

S. No.		Total calves presented for treatment	Calves suffering from Medical conditions	Calves suffering from Surgical conditions	Calves suffering from abdominal Surgical disorders
01	Number	1117	592	525	286
02	Percentage	-----	52.9	47	25.6

Table 2: Sex wise distribution of cases suffering from surgical abdominal conditions (N=286)

S. No.		Male Calves	Female Calves
01	Number	163	123
02	Percentage	57	43

Table 3: Age wise distribution of calves suffering from surgical abdominal conditions (N=286)

S. No.		Neonatal	Pre-Ruminant	Ruminat
01	Number	51	105	130
02	Percentage	17.83	38.13	45.45

Table 4: Organ/system wise distribution of Surgical Abdominal Conditions in calves (N=286)

S. No.	Organ/System	No. of calves	Percentage
01	Spleen	05	1.74
02	Liver	14	4.90
03	Urinary tract	78	27.2
04	GIT	88	30.7
05	Abdominal wall	101	35.3

Table 5: Year wise distribution of surgical abdominal conditions in calves (N=286)

S. No.		Year				
		2013	2014	2015	2016	2017
01	Number	74	46	59	52	55
02	Percentage	25.8	16.0	20.6	18.1	19.2

Table 6: Season wise distribution of surgical abdominal conditions in calves (N=286)

S. No.		Season			
		Spring	Summer	Autumn	Winter
01	Number	78	94	83	31
02	Percentage	27.27	32.86	29.02	11.90

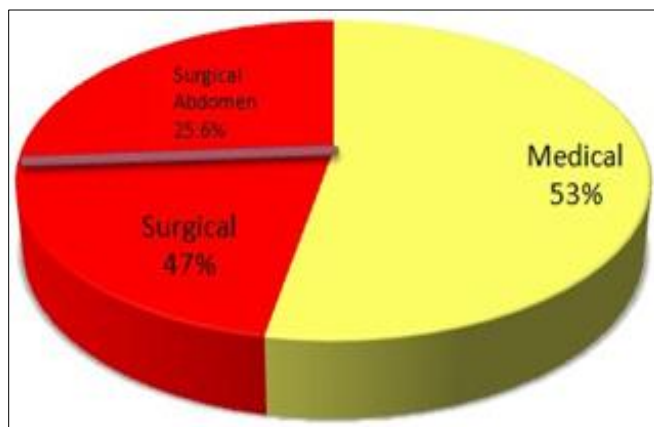


Fig 1: Hospital Incidence of surgical abdominal disease in cross bred calves

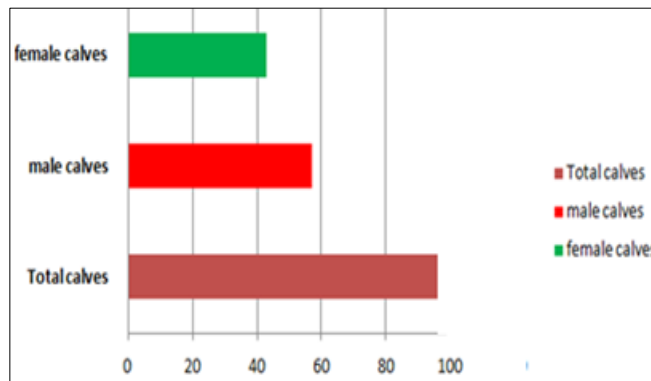


Fig 2: Sex wise distribution of surgical abdominal disease in cross bred calves

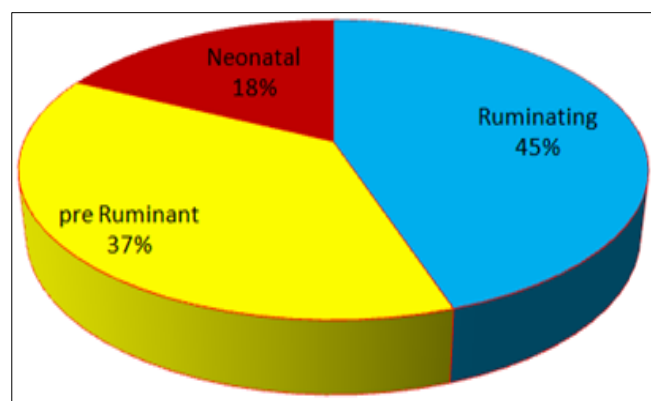


Fig 3: Age wise distribution of Incidence of surgical abdominal disease in cross bred calves

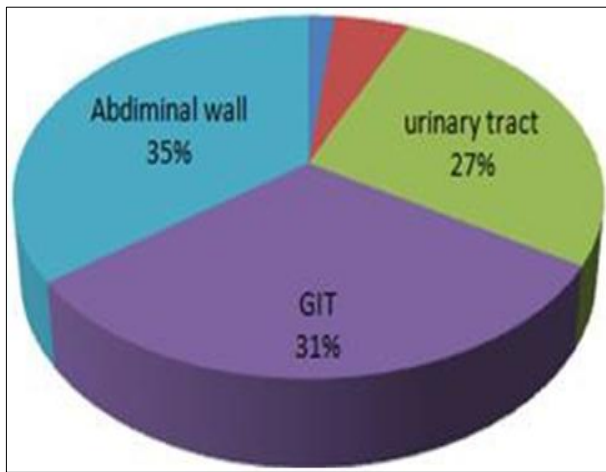


Fig 4: Organ/System wise distribution of surgical abdominal disease in cross bred calves

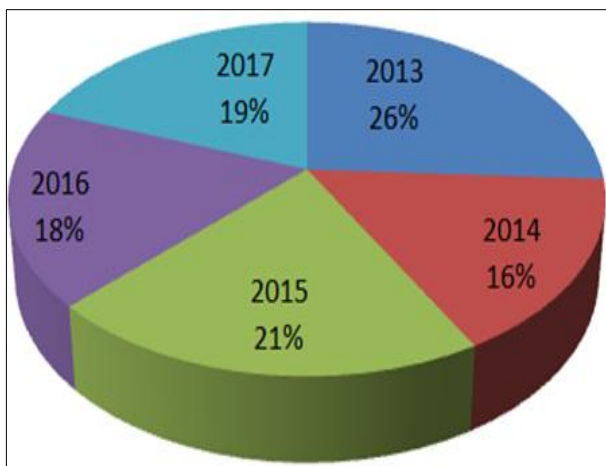


Fig 5: Year wise distribution of surgical abdominal disease in cross bred calves

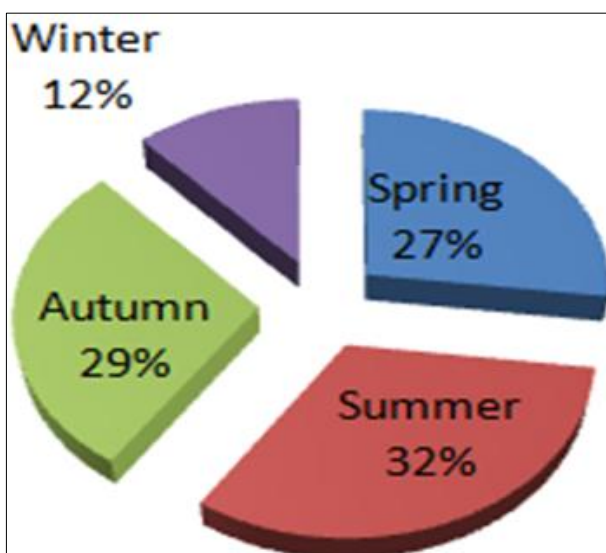


Fig 6: Season wise distribution of surgical abdominal disease in cross bred calves

Prospective Incidence

Of total two hundred forty seven calves presented during the period of one year study (N=247) medical conditions were 130 (52.6%), total surgical conditions 17 (47.3%) and surgical abdominal conditions 66 (26.7%). The hospital incidence of surgical abdominal disorders among calves was thus recorded

as 117/60 (26.7 %). Highest incidence of surgical abdominal disorders (40; 60.6%) was recorded in male calves than female calves (26; 39.4%). Ruminating calves of above 3 months age were highest (37; 56%) affected followed by pre-ruminant calves up to 3 months (18; 27%) and neonatal calves (11; 17%). Organ/System wise distribution of cases (N=66) revealed that abdominal wall affections were most abundant (19; 28.7%) followed by gastrointestinal surgical affections (13; 19.6%), urinary tract affections (22; 33.3%) and liver affections (09; 13.6%) and spleen (03; 4.5%). Lowest incidence of surgical abdominal disorders (08; 12.0%) was recorded in winter and highest in summer (21; 31.8%).

Discussion

Hospital incidence of surgical abdominal conditions in calves of Kashmir valley was recorded 25.6%. The incidence reflects the magnitude of the surgical abdominal conditions in calves and their importance in the clinical veterinary practice which were earlier largely underrepresented and mostly directed to medical management. However, Parrah *et al.* (2013) [12] had recorded higher (59%) incidence of surgical abdomen diseases in young calves from the same study area. Lower incidence of surgical abdominal disorders in calves recorded during present study could be attributed to the fact that the university hospital received only referred cases, and their distinction between medical or surgical was not possible during past few years for want of sonological diagnostic facility. Ultrasonographic scan is considered accurate diagnostic tool for making distinction between medical and surgical cases, as was done in case of foals (James and Earl, 2005) [8]. Contrary to our study Jonathan and Jerry (1987) [10] observed that 73% calves (aged upto 8 days) presented with abdominal pain or abdominal distension required surgical intervention.

Male animals are more prone to obstructive urolithiasis. In Kashmir valley its incidence is found highest in male calves as compared to steers and bulls in rest of India. These cases are managed by tube cystostomy-an abdominal surgical intervention (Parrah *et al.* 2014) [13], thus counted as abdominal disorder. High incidence of surgical abdominal disorders in male calves in this study (57%) is therefore rightly attributed to high prevalence of urinary tract diseases. Nevertheless gender predilection though reported (Shiju *et al.* 2010) [17], was not seen in most of other abdominal conditions e.g. colonic or anal atresia (Azizi *et al.* 2010) [1].

Ruminating calves of above 3 months age were most affected (45.5%) from surgical abdominal disorders followed by pre-ruminant calves of above 1 month age (38%). Neonatal calves were seen to be least affected (18%). Almost similar views were recorded during evaluation of abdominal disorders in cattle with the incidence of 68% in calves ranged from 0-6 months and 8% in 6-12 months (Kurt and Cihan, 2013) [11]. Contrarily Fierheller (2002) [6] reported that abdominal disorders were commonly encountered in young calves of < 2 months age. Higher incidence in older calves could be attributed to the developmental defects arising later in life especially due to the profound changes in the gastrointestinal tract system from neonatal to ruminating calves. Neonatal calves usually suffer from congenital surgical abdominal conditions. In one study nearly 84% of congenital malformations were reported surgical abdomen (Gangwar *et al.* 2014) [7].

Present study revealed that calves were most affected with abdominal wall affections (35.3%) followed by

gastrointestinal surgical affections (30.7%), urinary tract affections (29.2%) and liver affections (4.9%). Spleen was found least affected (1.74%). Among the abdominal wall affections umbilical hernia, omphalitis, extraumbilical abscess were most frequently noted disorders. These findings of the study are in close association with those of Čitek *et al.* (2009)^[4] and Kurt and Cihan (2013)^[11]. Atresia of intestines was recorded as most frequent problems in calves particularly in neonates among the surgical disorders of gastrointestinal tract, thereby substantiating the findings of Jonathan and Jerry (1987)^[10] and Parrah *et al.* (2008)^[14]. Causes for atresia of intestines could not be established, however genetic and other non-heritable factors have been incriminated (Payan-Carreira *et al.*, 2007)^[15].

No regular pattern of surgical abdominal disease incidence in calves was seen during the study period. The least incidence of 16% in year 2014 could be attributed to devastating deluge in whole valley which had hampered the referral and bringing of calves to university veterinary hospital.

Highest incidence of surgical abdominal disorders in calves was observed in summer followed by autumn and spring. Least incidence was seen in winter. Highest incidence of surgical abdominal diseases in calves during summer could be attributed to substantial increase in GIT affections especially obstruction, choke and impactions which are mostly prevalent in this season. Similar observations in calves were reported by other researchers (Das and Hashim, 1996^[5]; Sarkar *et al.*, 2013^[16]). Prospectively nearly 1/4th (66) of total 247 calves were sufferings from various surgical abdominal conditions, thus giving out the prospective hospital incidence of 26.7% which was almost similar to retrospective incidence of 25.6% in Kashmir valley conducted during first phase of this study. Sex wise, age wise and season wise the prospective incidence of surgical abdominal disorders recorded was almost matching with retrospective study conducted by us in phase 1st of this study. However, the urinary tract affections showed highest prevalence in prospective study (33%) compared to the abdominal wall affections (35%) that constituted highest prevalence in our retrospective study. The probable reason seems to be better diagnostic facilities like radiography, ultrasonography and improvement in biochemical analysis along with the highest successes rate in surgical interventions of urinary tract affections encouraging more referrals along with preference of animal owner for DVCC at Shuhama over the last half decade.

Conclusion

This study led to the conclusion that the incidence of surgical abdominal disorders in calves is high, thus need focused attention at every veterinary hospital.

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