

**A report on exploring the risk factors associated with the
occurrence of navel ill at Muktagacha, Mymensingh**



A CLINICAL REPORT SUBMITTED

BY

Intern ID: 52

Roll No: 15/57

Registration No: 01478

Session: 2014-2015

**Report Submitted in Partial Satisfaction for the Requirements of the
Degree of
Doctor of Veterinary Medicine (DVM)**

**Chattogram Veterinary and Animal Sciences University
Khulshi, Chattogram -4225**

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A Report on exploring the risk factors associated with the occurrence of navel ill at Muktagacha, Mymensingh

Abstract

The study was conducted from Government Veterinary Hospital, Muktagacha, Mymensingh during the 2 months long internship program (12th October to 13th December 2019). The present investigation was conducted on 12 navel ill-affected calves out of a total of 29 calf patients. The effect of age, sex, breed, and housing system (concrete, semi-concrete and mud floor) on the occurrence of navel ill in calves was investigated. Calves of 2-3 weeks age group demonstrated the highest incidence (75%) while those of >3 weeks the lowest (25%). Navel ill occurred mostly in female calves (58.3%) as compared to the male calves (41.6%). The crossbred calves were predominantly (83.4%) affected as compared to the indigenous (16.67%). The calves reared in mud floor have the highest rate of this disease (83.34%) whereas in concrete or semi-concrete floor (16.67%).

Keywords: Navel ill, crossbred, calf

Chapter 1

Introduction

Diseases and disorders of calves are thought to be the important constraints for cattle development in Bangladesh. In Bangladesh, the total cattle population is about 24.086 million of which 6.14 million is dairy cow and it contributes 1.54% of our GDP (Banglapedia, 2014, BER 2018). The breeds of livestock available in Bangladesh are as follows: Cattle: (i) local breed of cattle- non-descript indigenous type, Red Chittagong, Pabna Cow; (ii) Exotic: Haryana, Sindhi, Shahiwal, Jersey, and Holstien-Friesian; (iii) Hybrid: *Bos indicus*'*Bos taurus*. Crossbred animals under Bangladesh condition contributes about 24% of the 6.9 million breedable cows and heifers (Huque et al., 2011) and Friesian x Local crossbred cows's milk production performance considerably improved over the decades (Bhuiyan, 2011). Congenital disorder in calves has been increasing alarmingly with the increase of crossbred animals (*Assen, A.M. 2016*).

In commercial farming, besides the getting of a calf dam per year, it is recommended to ensure the survivability of newborn animals. Among the medicinal cases which required surgical interventions navel ill is recognized as an important disease. Navel ill is a condition characterized by inflammation, as a result of infection, in the umbilicus and its associated structures. It occurs commonly in neonatal farm animals and appears to be particularly common in calves delivered in dirty environments (Radostits et al., 2007; Naik et al., 2011). Anatomically the umbilicus and its associated structures comprised of the amniotic membrane, umbilical vein (paired externally), paired umbilical arteries, and the urachus. The smooth muscles of the umbilical arteries contracts thereby forcing the umbilical arteries to retract as far back as the top of the bladder (Radostits et al., 2007). The umbilical cord normally dries up within a week, usually 1 to 8 days, after parturition (Hides and Hannah,

2005). The infection may manifest in any of the clinical entities or a combination of omphalitis, omphalophlebitis, omphaloarteritis, or infection of the urachus.

Navel or joint ill is a disease of young calves, usually less than one week of age. The prevalence of navel ill or omphalitis is 5 to 15% of new-born calves (Mee, 2008a). If this condition is left untreated can lead to reduced growth, joint ill and other sequelae (Mee, 2008b). An abscess may develop from which pus (often like a thick custard) may burst. The calf may have a high temperature and reduced appetite. Other sites where bacteria can settle include the eyes, around the heart and the brain. Death is common in the latter cases. In some calves, the infection spreads from the navel to the liver causing a liver abscess. In this case, problems may not be noted until the calves are older (Radostits et al., 2007).

The mean annual calf mortality is 10.2%. None of the farmers practiced navel treatment during birth of calves. Mean annual cross-breed calf mortality rate recorded is high, above tolerable range. The occurrence of this condition is mostly associated with poor hygienic maintenance of maternity pen, the prolonged residency of the newborn calf in unhygienic maternity pen, lack of adequate and early intake of good quality colostrum and immediate navel antiseptic after parturition (Assen, A.M. 2016). It has been observed that in new-born calves that previously had a failure of transfer of maternal immunity during fetal life navel infection may act as a source of infection leading to septicemia (Naik et al., 2011). This study was done to know the present status of this economically important disorder at the upazila level in Bangladesh.

Limited studies on navel ill prevalence in calves and associated predisposing and risk factors have been reported in Bangladesh. In addition, considerably many cases of navel ill were presented at the internship placement during 2 months rotation at upazila veterinary

hospital, Muktagacha, Mymensingh. Therefore, this study was decided on navel ill cases, economically important problem for the cattle farmer, for producing scientific clinical report. The objectives of the present study were:

1. To estimate the prevalence of navel illness in calves based on the cases presented at the upazila veterinary hospital, Muktagacha, Mymensingh.
2. To know the distribution of navel ill cases by different factors.
3. To describe treatment procedure for the navel ill cases and pattern of drugs prescribed.

Chapter 2

Methodology

2.1. Study placement:

The study was conducted at a Government Veterinary Hospital at Muktagacha, Mymensingh, Bangladesh. Muktagacha is an Upazila of Mymensingh District in the Division of Mymensingh, Bangladesh. Upazila Veterinary Hospital, Muktagacha is located in college road area which is in a nice position given the fact where it is in the center of Muktagacha so the owners from surrounding unions can come easily here to get treatment of their animals. Doctors, staffs are very welcoming so its easy to communicate with everyone so during placement it was great knowing all and working side by side. The owners were easy to get along with which made the treatment process much fruitful.



Fig 1: Map of the Muktagacha upazila

2.2. Rotation period:

This study was undertaken during veterinary hospital rotation from 12th October to 13th December 2019.

2.3. Methods of data collection:

The study was carried out at Muktagacha upazila Veterinary Hospital (MUVH) which is one of the most eminent veterinary establishments for dairy cattle related cases in Bangladesh. The hospital service was facilitated by one upazila livestock officer, one additional upazila livestock officer, one veterinary surgeon and one veterinary field assistant. Having hands-on training on different cases as a part of the internship was very satisfactory. The internship duration at this placement was 60 days, starting from October to December, 2019.

During the study period a total of 1245 cases in different types, averaging 20 cases per day were presented at the hospital. Of 1245 cases 130 cases were cattle; however, out of 29 calves 12 cases of navel ill were used for this clinical report, also considering the follow up cases. Distribution of the study cases were 10 cross-breed calves, 2 indigenous calves.

A wide range of diseases and disease conditions was investigated but particular focus was given on navel ill for this study. Cases were tentatively diagnosed based on clinico-epidemiological history, signs or disease conditions by experienced and registered veterinarians. Salient clinical signs and lesions were considered for the diagnosis of the cases.

A structured record keeping sheet was used to record the required data through farmer's interview, and physical inspection. Data included farmers' address, education and experience, species, farm size, floor type, age of the calves, clinical history, clinical signs, morbidity and mortality, tentative diagnosis and prescribed drugs. Tentative diagnosis of each calf was done by the assigned veterinary surgeon or by the working intern student as per the standard procedure or protocol maintaining personal

protection (Majò and Dolz, 2011). Images of treatment of the cases are presented in appendix1.

All the data were entered into the spreadsheet of Microsoft Excel 2010. Data were then coded and re-coded in MS excel 2010. Data integrity and consistency were checked before exporting to STATA 13 (*Stata Corp, 4905, Lakeway Drive, College Station, Texas 77845,USA*) for statistical analysis.

Proportionate prevalence was calculated by the number of specific cases divided by the total number of cases and other recorded factors (age of the calves, sex, breed, housing type). Descriptive statistics were also performed on data of antibiotics prescribed for the calf cases.

Fisher's exact test was applied to assess the difference of proportion of each case type (for example, navel ill, yes/no) between or among categories of each factor under the study. The

categories of factors were as follows: location, age (2-3 weeks/ > 3 weeks), breed (cross breed / indigenous), sex (male/female), housing type (concrete/semi concrete/mud floor). The results were expressed as percentage.

Chapter 3

Results

The present investigation was conducted on several affected calf patients those came in hospital for their disease complication. Out of 29 calves, 10 calves were diarrhea patients, 2 were suffering from malnutrition, 3 hernia patients, 2 had congenital nervous system disorder and navel ill-affected animals were 12, which found in 2 months of the study (12th October to 13th December 2019).

Table 3.1: Percentage of different diseases (n=29)

Serial no	Name of the disease	No.of affected calves	Affected percentage (%)
1.	Diarrhea	1 0	0.35 %
2.	Malnutrition	2	0.06 %
3.	Congenital nervous system disorder	2	0.06 %
4.	Hernia	3	0.10 %
5.	Navel ill	1 2	0.41 %
Tot al		2 9	

Out of 29 diseased calves the percentage of navel ill was 0.41% which was the highest and the percentage of malnutrition and congenital nervous system disorder was the lowest 0.01%. The percentage of hernia patients was 0.10%. Diarrheal affected calves percentage was 0.35% which is also higher in occurrence.

Table 3.2: Distribution of navel ill by different factors

Variabl e	Categorie s	N	%
Age	2-3 weeks	9	75
	>3 weeks	3	25
Breed	Cross breed	1 0	83.4
	Indigenou s	2	16.6 7
Sex	Male	5	41.6
	Female	7	58.3
Housing system	Concrete/ semi concrete	2	16.6 7
	Mud floor	1 0	83.3 4
Total		1	
		2	

Out of 12 calves affected with navel ill, 3 were indigenous (local) and 9 were crossbred. Five of the animals were male, seven were female. Ages ranged from 2 to 6 weeks. The effect of age, sex, and breed on the occurrence of navel ill in calves was investigated. Calves of 2-3 weeks age group demonstrated the highest incidence 75% while those of >3 weeks the lowest 25%. Navel ill occurred mostly in female calves 58.3% as

compared to the male calves' body and weights from 20-35 kg (Both breed). Calves reared in mud floor showed more susceptibility 83.34% to the disease than the calves reared in concrete/semi concrete floor 16.67%.

Table 3.3: Examination of the calves and identifications of the navel ill affected calves by observing the clinical sign in the study area

Serial no	Clinical signs	N	%
1.	Swollen of navel area	12	100
2.	Navel abscess	7	58.33
3.	Fever	10	83.33
4.	Pain	10	83.33
5.	Loss of appetite	5	41.66
6.	Myiasis	2	16.67
Total	12		

The clinical findings in navel ill are usually the enlargement of the umbilicus with purulent material, chronic toxemia, higher temperature, and unthriftiness (Radostits et al., 2007). Also lethargy (from fever) and swollen joints (usually the carpal joints "knees" swell first, but not always) are also seen. Here in the study out of 12 cases all the calves showed one common clinical sign and that was swollen navel area so the percentage of this sign showed 100%. 7 calves had navel abscess which means 58.33% cases showed this sign. 83.33% of the affected calves showed pain sign and had fever. 5 calves had anorexia which makes the percentage of this

sign 41.66%. Severity of pain varied from calf to calf. Only 2 calves came with the sign of myiasis so the lowest percentage 16.67% for this.

3.4. Complication of navel ill:

In this study out of 12 cases there were 7 calves with which had navel abscess, 2 of them had myiasis and later on 1 of them showed the positive symptoms of hernia.

3.5. Treatment:

Closed abscesses were opened with B. P. Blade, the pus was drained and washed with the 1 % potassium permanganate (PPM) solution. On the second day again, the pus was drained and washed with 1 % potassium permanganate solution. The calves with the maggot wounds were washed with 1% potassium permanganate solution and packed with turpentine oil gauze in the umbilicus.

When navel ill develops, most of the time broad-spectrum antibiotics (for example Strepto penicillin) are the best choice. If caught early, antibiotic treatment can be successful (Merck veterinary manual).

The calves were treated with Strepto-Penicillin at a dosage of 1ml/20 kg and Meloxicum injection, 0.5 mg/kg administered intramuscularly for 5 days. The routine dressing of the wound was carried out. The area surrounding the umbilicus was smeared with fly repellent ointment to prevent the infestation of the wound with the maggot.

Out of 12 calves who received treatment previously , 7 cases came up for follow up by which we were able to ensure total recovery within 10 days.



Fig : 2

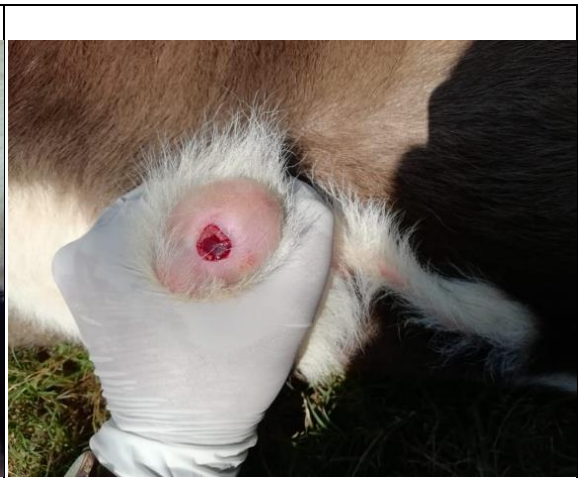


Fig : 3



Fig : 4



Fig : 5

Figures- Figure 2 and 3 showing two navel ill-affected calves with pus-filled swollen navel area and 4 and 5 no figures show the dressing procedure.

Chapter 4

4.1. Discussion:

Calves between 5 and 14 days are most frequently affected by navel ill. However, the disease is more prevalent in calves just after birth (Naik et al., 2011). In Bangladesh, the diagnosis of the affection may be delayed because animals are reared in backward system and owners are either ignorant or have less interest in their management (Sabuj et al., 2016). In the study we saw that 75% affected calves were in age between 2-3 weeks and 25% were >3 weeks old.

Occurrence of navel ill is higher in female calves than in male calves (2017 Jalal et al.) which was found in our study too. Out of navel ill affected calves 58.3% were females and 41.6% were male. In this study crossbred calves showed highest susceptibility rate towards navel ill; 83.34% in comparison with the indigenous breed 16.67%. We find the similar result from the (Jalal et al., 2017) where they found the calves having 75% Holstein Friesian (HF) blood are more prone to navel ill in compare with 62.5% Holstein Friesian (HF). Occurrence is higher in crossbred calves than in indigenous calves also studied (Rassel et al., 2020).

It occurs commonly in neonatal farm animals and appears to be particularly common in calves delivered in dirty environments (Radostits et al., 2007; Naik et al., 2011). In this study the calves reared in mud floor showed the highest rate of occurrence 83.34% than the calf reared in concrete/semi concrete housing system 16.67%.

4.2. Conclusion:

Navel ill in calves is fairly available in our study area. Navel ill occurred mostly in calves of 2-3 weeks age group. The rate of navel ill was higher in female than that in male calves. The higher affected rate of navel ill was

encountered in the cross breed calves in contrast to indigenous calves. The calves reared in mud floored housing system were prone to navel ill due to unhygienic condition. The sequelae of this disease can lead to navel abscess, joint ill which causes poor growth of the calves and if this situation is untreated, later on toxemia arises which leads to death. So this is an undoubtedly serious disease for calves. The umbilical care by debridement of necrotic tissues and a good dressing of pus with topical antiseptics, coupled with systemic antibiotic therapy was effective in the treatment of navel ill. Producers were advised to improve maternity pen hygiene, taking care of navel area of the calves and ensure calves have adequate early intake of good quality colostrum. This study was conducted over a short period of time but as we kept working, it grew on our mind so we are willing to continue this study in an extended way in near future.

Chapter 5

Limitations

1. The majority of the owners were illiterate followed by some with a primary level of education so sometimes it was difficult to find out the case history in a proper way.
2. There were no diagnostic lab in the hospital.

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ACKNOWLEDGEMENT

All praises are due to “Almighty Allah” who enabled the author to complete this report successfully.

The author express her deep sense of gratitude, heartfelt respect and immense indebtedness to her beloved teacher & supervisor **Dr. Md. Masduzzaman, Professor, Department of Pathology and Parasitology**, Chattogram Veterinary and Animal sciences University for his valuable advice, scholastic guidance, suggestions, inspiration and who was involved with this report through its inception.

I would like to express my deep sense of gratitude and thanks to **Professor Dr. Abdul Ahad, Dean, Faculty of Veterinary Medicine**, Chattogram Veterinary and Animal Sciences University for his valuable suggestion & inspiration.

The author wishes to express his gratitude to the **Director of External Affairs Professor Dr. A.K.M Saifuddin**, Chattogram Veterinary and Animal Sciences University, for his supervision and kind co-operation during the period of internship

I also express thank to my friends for their help and co-operation during the tenure of writing of this report. The author is immensely grateful to all of them, although it is not possible to mention every one by name.

The Author