**CHAPTER 1**

**1. INTRODUCTION**

Calf morbidity and mortality are perennial problems for dairy producers worldwide. Calf diseases that cause morbidity and mortality are the results of complex interaction of the management practices and environment, infectious agents and the calf itself. Scours in neonatal period and pneumonia in older calves are known to be responsible for most of calf hood morbidity and mortality (**Olsson *et al*., 1993; Debanth *et al*., 1995; Sivula *et al*., 1996b**). Several environmental and managemerial factors act as risk factors for the occurrence of calf morbidity and mortality (**Waltner-Toews *et al*., 1986b; Lance *et al*., 1992a; Bruning-Fann and Keneene, 1992**). Crossbreeding program has been taken up as a national policy to develop dairy and livestock industries in Bangladesh. But the calf morbidity and mortality have been recognized as a serious concern affecting the replacement rate and thereby genetic improvement in dairy animals (**Debnath *et al*., 1990, 1995; Hossain *et al*., 1992a, b; Samad *et al*., 2001, 2002; Samad 2002**). In smallholder dairy farmers, calves are maintained just to induce letting down of milk in cows. Accordingly, calves are usually neglected as they do not bring any immediate financial return and the cost of their maintenance considerably adds to the production cost of milk. As a result, the calf is at greatest risk and the risk factors associated with calf morbidity and mortality has included unhygienic maintenance and inadequate feeding of first colostrums to newborn calves and malnutrition (**Samad *et al*., 2001**).

In our country, neonatal calves are seems to be affected with umbilical infections that are frequently characterized by umbilical abscess and high temperature. This is called navel ill. It occurs in young calves usually less than three week of age. Navel ill is a term that describes several conditions affecting the umbilicus (navel cord). The navel cord contains blood vessels that supply the calf with oxygen and nutrients during gestation. It occurs as a result of infection entering via the umbilical cord at, or soon after, birth. This infection can result in a range of signs depending on where the bacteria spread to. Chronic umbilical infections have an unfavorable influence on the general condition and health of the animal. In developing fetus the various components of the umbilical cord pass through the ventral abdominal wall. These comprise the umbilical vein which leads to the liver, two umbilical arteries which arise from the iliac arteries and the urachus passing to the bladder. At birth the amniotic membrane of the cord is torn and gradually the umbilical vein and the urachus close, although they temporarily remain outside the umbilicus. The risk of infection is greater when the cord is torn very short. Infection occurs soon after birth and may result in omphalitis, omphalophlebitis and omphaloarteritis.

From the local infection at navel, extension may occur to the liver or via the urachas to the bladder and result in chronic ill health, or to produce systemic septicemia. In blood born infections localization is most common in the joints producing a suppurative or non-suppurative arthritis **(Blood et al., 1989)**. There is usually a mixed bacterial flora including *E.coli, Proteus spp, Staphylococcus spp.* *Actinomyces pyogenes* etc.The facultative myiasis producing flies such as houseflies, blowflies, flash flies can be responsible for navel infections **(Susan et** **a1., 1998).** The housing and floor management is very important after birth Male calves have more chance of getting infection and calves remain in high risk within 3-5 days according to the antibody level in the blood **(Hungerford etal., 1991)**. The mortality is also high during this time due to development of septicemia **(Blood et****al., 1989)**. Myiasis can complicate the condition and joint ill can consequence the condition through septicemia **(Susan et a1.,1998, Blood et a1., 1989& Hungerford et** **a1.,1991)**.

Therefore, the objectives of this study were:

a) To investigate the occurrence of calf diseases in dairy farm condition at Chittagong region.

b) Know the effect of age, sex, and breed, occurrence of diseases specially navel ill.

**CHAPTER 2**

**2. REVIEW OF LITERATURE**

**2.1 The Calf**

Calf refers to the age group of young cattle from birth to six or nine month of age (**West, 1995**). Elsewhere it was defined as cattle up to six month of age after which in natural circumstances, it might be expected to be self-sufficient (**Webster, 1984**). The proportion of calves weaned before six months of age increases from less intensive to more intensive systems of production (**ILRI**, **1996**). The normal flora is not well established and unlike to newborn of primates, they are born with no circulating antibodies to combat infection (**Bath *et al.,* 1985**). Yet the calf must survive in highly contaminated environment. In the digestive system of newborn calves, there are certain alterations. The newborn calves have also specialized intestinal epithelium capable of engulfing soluble protein, which will disappear within 24 hours afterbirth (**Cunningham, 1992**). For the newborn calves, it is most important that closure occur prior to feeding, so that the liquid feed will be prevented from entering the rumen and causing digestive disturbance (**Blowey, 1990**). Other chemical and physical components of digestive system develop with age as the calf starts feeding on different feeds (**Heinrichs and Radostits, 2001**).

**2.2** **Etiology of Navel ill in calf:**

**Blood etal.,(1989)**reported that navel ill due to bacteraemia or septicemia is caused by *E. Coli, Listeria monocytogenes, Pasteurellu spp., Streptococci* or *salmonella* spp. Bacteraemia with localization in joints caused by *streptococci,* micrococci, and *E*. *insidiosa,* gas gangrene of the navel caused by Cl. *septicum,* and *Cl.* *oedematiens.* septicemia caused by *E. coli* and *L.monocytogenes.* Non-specific infections caused by pyogenic organisms including *Corynebacterium pyogenes, Sphaeroporus necrophorus. Streptococcus* and *Micrococcus* *spp and Pasteurella spp.* occur in all spp.

**Hungerford et al., (1991)**reported that *Clostridium* *septicum*  rarely *clostridium chauvoei, Spherophorus necrophorus, Micrococcus Staphylococcus pyogenes, Corynebacterium pyogenes,* and *Pasteurella hemolytica* etc causinginfection.

**2.3. Predisposing factors of Navel ill in calf:**

**Age :**

**Samad et al., (2001)** reported that within one week of age the infection is very common. It is reported that the infection rate is high (73.03%) at 0-30 days of age than 31-90 days of age (24.72%) and it is very low (2.25%) in >90 days .In farm condition the calf mortality rate is very important factor that directly affect the farm economy. Navel ill is one of the most important factors for calf morbidity and mortality. During navel ill, if not treated properly the infection may spread at liver as well as joint by ascending route and cause liver abscess & joint ill respectively. It is reported that the morbidity rate of calf is about 2.40% and among them the mortality rate is 0.27% at 0-30 days of age but no mortality reported above 30 days of age.

**Sex :**

**Das & Hashim, (1986)** reported that the navel infection is very high in male (66.7%) in comparison to female (33.3%). The occurrence of this disease ratio in male and female is 2:1. Urine contamination alone with the unhygienic condition aggravates this condition.

**Breed :**

**Das & Hashim, (1996)** reported that local breeds are more susceptible to umbilical infection than crossbred animals. It is reported that about 66.7% local calves are affected with umbilical infection than crossbred calves (33.30%).

**Season:**

**Samad et al., (2001)** reported that season wise occurrence of navel ill calves maintained under farm and rural managemental systems were 37.08% and 34.83% during summer & rainy season respectively and 28.09% in winter season.

**2.4. Mode of infection of Navel ill in calf:**

**Leadley and Sojda (2001)** reported that the umbilical cord is a hollow tube. Pathogens traveling up the cord's interior have easy access to the calf's circulatory system by the way of the liver. Bacteria that invade the liver enter the blood. They are circulated throughout the *body. S*epticemiaandjoint ill are common names for diseases that result from this contamination.

**Hungerford et al., (1991)** reported that infection may take place via the navel at birth or the germ may be via the navel at birth or the germ may be taken in with infected feed, milk or water. This will vary very widely with the type of organism concerned and its virulence. Infection in some cases is intra uterine.

**2.5. Pathogenesis of Navel ill in calf:**

**Susan et al., (1998)**reported that facultative myiasis producing flies: *Musca domestica* (the house flies), *Calliphora, Lucilia, and Phormia* spp (the blow flies or bottle flies), and *Sarcophaga spp* can be responsible for navel infection. Under normal condition, adult flies of these genera lay their eggs in feces or in decaying animal carcasses. In facultative myiasis, the adult flies are attracted to a moist wound, skin lesion, or soil hair coat. A common site is the breech, wound in the skin as adult female flies feed in these sites, lay their eggs. The eggs hatch, producing larvae (maggots) that move independently about the own surface ingesting dead cells, exudates, secretions & debris but not living tissues. These conditions are known as strike. These larvae irritate, injure, & kill successive layer of skin & produce exudates. Maggots can tunnel the thin epidermis in to the sub cutis. These processes produce tissue cavities in the skin that measures up to several centimeters in diameter. Unless the process is halted by appropriate therapy, the infected animal may die from shock, intoxication, histolysis, or infection. A peculiar, distinct, pungent odor permeates the infested tissue & the affected animal. Advanced lesions may contain thousands of maggots. Adult female flies are attracted to fresh skin wound on any warm-blooded animal, where they lay their eggs. The female lays several thousand eggs during her lifetime. Newly infested wound contain screw worm larvae of a single age; older and larger wounds may contain larvae of various ages & of different species of flies. The malodorous reddish brown fluid produced in the wound usually drains & may stain the hair or wool around or below the wound. Even a small & relatively inconspicuous wound infested with screwworm larvae attracts not only more screwworm flies but also facultative myiasis-producing flies. Necrotic tissues attract more flies. The wound can become greatly enlarged due to multiple infestations & unless treated, usually results in death of the animals.

**Blood et al.,(1989)** reported that the usual pattern of development in neonatal infections is a septicemia, with a severe systemic reaction, or a bacterimia with few or no systemic sign followed by localization in various organs. If the portal of entry is the navel local inflammation occur called navel ill, which can be easily overlooked if clinical examination is not thorough. From the local infection at the navel, extension may occur to the liver or via the urachus to the bladder and result in chronic ill health or systemically to produce septicemia. In blood born infections localization is most common in the joints producing a suppurative or non-suppurative arthritis. Less commonly there is localization in the eye to produce panopthalmitis on the heart valves to produce valvular endocarditis or in the meninges to cause meningitis. Most of these secondary lesions take some time to develop and signs usually appear in 1 to 2 weeks of age. Dehydration and electrolyte imbalance can occur very quickly in newborn animals whether diarrhoea and vomiting are present or not. This is probably due to deprivation of fluid intake as much as to loss of fluid. The extreme depression observed in many cases is probably caused by biochemical changes in addition to the effects of bacterial toxins.

**2.6. Clinical signs of Navel ill in calf:**

**Susan et al*.,* (1998)** reported that the first indication that an animal is infested in exudation of serum and matting of the hair coat over the site of penetration. In light skinned animals, a small inflammatory area is noticeable in the center or to one side of which a tiny hole is visible. These lesions may be palpated as they develop. On the third or fourth day, the larvae are 1.5-2 cm long & produce abscess like lesions resembling those of *Hypoderma spp* in cattle. These lesions vary in size, shape, position, & the number of larvae they may contain. The hair coat often becomes parted over the summit of the lesions & reveals an opening 2-3 mm in diameter. The posterior aspect of the larva is visible through these openings through which it breathes. These openings are generally circular & well defined. Small animals infested with five or more larvae for several days become emaciated, & the skin becomes dry & loses its luster. The penetration of the skin by the larvae, their development in the subcutaneous tissues & secondary bacterial infections produce intense irritation & inflammation of the tissues.

**Hungerford et al.,(1991)**found that temperature is raised, varying from normal to 106°F*.* The joint illness may be in the fetlock, stifle or in the hock most frequently and less frequently, in the hip, shoulder, knee, elbow and flexor tendons. More than one joint is often involved. There may be inflammation and abscess formation in the navel. Enteritis with a severe scouring may occur, particularly with Salmonella infections. Pneumonia, coughing and nasal discharges are quite common in some infections such as *Corynaebacterium pyogenes.* Nervous symptom such as continual walking and refusing to suck has been noted. Death may be very rapid from septicemia.

**Bain et al*.,* (1963)**found that abscess formation is classed as abscess in the soft structures as a primary condition leading to a systemic reaction, with toxemia, and extension of the pyogenic infection. He notes that abscess formation would account 13% of his cases. He defined joint ill mainly a case of septicemia with localization particularly in the joints, with abscess formation there.

**2.7. Treatment of Navel ill in calf:**

**Susan et al.,(1998)** Chemo prophylaxis consists of wetting to complete saturation of susceptible areas with suitable insecticidal & larvicidal preparations, such as the organophosphate insecticides or cyromazine, a specific larvaecide in dips & sprays. Jetting is the most efficient ­insecticide is forced into the fleece usually locally to the breech, along the back, & head under high pressure. Protection can last for 6-8 weeks but where the primary fly is resistant, it may last only 2-3 weeks. Weekly application of ronnel (2.5%) under pressure to wounds until heal can be highly beneficial, particularly for screw worm infestation. Before suitable agents are applied, all hairs & debris should be removed from the struck area & around it. The larvae located deep within the tissue must be extracted. Ivermectin at dosages of 50,100 & 300 μg/ kg administered to infested cattle resulted in 100% larval mortality for at least 6, 12, and 14 days, respectively.

**Hungerford et al.,(1991)** reported that Chloromycetin in full doses should be injected or, alternatively a combination of penicillin (long acting) and streptomycin in full dose rates. Navel abscess should be opened, under general anesthesia, with a cruciate incision. Following incision of course systemic antibiotic should be injected i/m. In case of joint ill anesthetize the neonate and aspirate the inflamed joints. Use a 16-gauge needle, as the joint fluid may be turbid. Shave and sterilize the skin, inject one of the prednisolone compounds or betamethasone and 1 gram streptomycin sulfate may be injected in one or two occasions.

**Blood et al.,(1989)** reported that treatment in the joint infection is difficult to achieve because of the poor blood supply to the part and the low levels of the antibacterial drugs which develop in the synovial fluid after their parenteral administration. It is customary to administer broad spectrum antibiotics, or a combination of penicillin and streptomycin, intramuscularly if the causative bacteria are not identified. Intra articular injection is not usually practiced unless synovial exudates are aspirated for diagnosis or in treatment. In both cases careful asepsis and an accurate technique is required.

**2.8. Prevention and Control of Navel ill in calf :**

**Leadley and Sojda, (2001)** reported that when dipping the navel, it should use a strong tincture of iodine. Tincture of iodine also contains alcohol, which will help to seal and dry the cord.

**Susan et al.,(1998)** reported that with respect to the prevention, owners should be educated about the effectiveness of treating all skin wounds. Animals with skin wounds should be confined to fly free areas. The hair coat should be kept clean of urine or feces & should not be permitted to become matted. The control of adult flies in the field & the destruction of their breeding places are excellent preventive measures. A thorough sanitation program is necessary to control fly population in and around livestock population. All manure accumulations should be removed at least twice a week or handled properly, ifstored on the premises, to minimize the fly breeding. Ifsolid manure management practices are applied efforts should made to reduce manure moisture. If a liquid manure pit is used, manure should not be allowed to accumulate above the waterline, either floating or sticking to the sides, because this is an ideal site for fly production. Insecticides should be considered as supplementary to sanitation and management measures aimed at preventing flies breeding. Space sprays, mists or fogs with quick `knockdown' but no residual action can be used for immediate reduction of high number of adult flies. Other measures for control of adult flies include use of insecticide resin strips or various fly baits. These measures also can be applied directly to fly breeding sources; however, this should be considered only for fly breeding spots that cannot be eliminated by normal sanitation practices.

**Smith & Sherman, (1994)** reported that after birth umbilical stump should be dipped in iodine. Tincture of iodine is nearly universally recommended for this task. Some authors recommended that 7% tincture of iodine while other consider 2% tincture ofiodine or povidone iodine to be preferable. Excess length of the cord should be trimmed off with clean scissors and fresh end is thoroughly dipped in iodine.

**Hungerford et al.,(1991)** reported that management and hygiene is of utmost importance. Clean pasture, clean bedding in calving stalls, ligation of umbilical cords, swabbing with tincture of iodine and isolation of all cows suspected to be carriers, are all important features. It is suggested that dipping the navel cord and umbilicus of calves in tincture of iodine immediately after birth will minimize umbilical infection.

**Blood et al.,(1989)** reported that prophylactic measures should include removal of infection from the environment or removal of the animal from the infected environment, increasing the specific resistance of the newborn animal and suitable management to increase non-specific resistance. When attempting to remove the infection from the environment the problem of whether the infection derives from an intra or extra uterine source must receive consideration. lntrauterine infection necessitates local uterine or systemic treatments of the dam to eliminate the infection from the uterus before conception occurs. Swabs of the uterine contents should be examined before and after treatment of the suspected animals. Disinfections of the maternity quarters are recommended. A rotation of fields should be used for animals at pasture. Increasing the specific resistance of the new born can be carried out by vaccination of the dam in the latter part of pregnancy as described above or by the use of specific antiserum immediately after birth. An adequate supply of colostrums or alternatively blood transfusions should be provided to ensure no specific resistance. In specific cases where infection is probable antibiotics or sulphonamides should be used prophylactically. Suitable management practices should be followed with particular reference to feeding methods when animals are reared artificially. An adequate supply of nutrients and vitamins should also be provided for the dam and the newborn. Movement of the heavily pregnant and newborn animals should be avoided. Disinfections of the navel at birth are a worthwhile practice in all circumstances but are essential under conditions of heavy environmental contaminations.

**CHAPTER 3**

**3. MATERIALS AND METHOD**

**3.1 Study time and area:**

This study was conducted through the month of April in 12 different dairy farms in Chittagong district and those were ; Nazrul dairy farm, Home land dairy farm, Faisal dairy farm, Haque vandary dairy farm, Molla dairy farm, Super dairy farm, Samia dairy farm Hazi dairy farm, Jn dairy farm, Vhuyan dairy farm, Amin dary farm, and Joynal dairy farm.

**3.2 Calf selection**

The diseased calf from birth to 2 months of age had considered for study total 117 no. of calves selected for their common occurrence of diseases.

**3.3 Variables**

Some factors of navel ill had taken as variables which were age, sex and breed.

**3.4 Data collection procedure**

a preset questionnaire was used to collect the data by interviewing the farmer.

**3.5 Collection of data**

117 cases from 12 different farms were considered. Eight common diseases were recorded. Among those diseases, occurrence of diarrhea was the highest (30%), followed by anorexia (24.7%), fever (12%), navel ill (8.5%), pneumonia (3.4%), conjunctivitis (7.7%), joint ill (1.7%), and blot (12%). Data regarding the overall diseases occurrence in neonatal calves in 12 farms have presented in Table 3.5.

Over all diseases occurrence in claves of twelve dairy farm

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Diseases | Nazrul dairy farm | Home land dairy farm | Faisal dairy farm | Haque vandary dairy farm | Molla dairy farm | Super dairy farm | Samia dairy farm | Hazi dairy farm | Jn dairy farm | Vhuyan dairy farm | Amin dary farm | Joynal dairy farm | total | % |
| Diarrohea | 3 | 3 | 2 | 3 | 2 | 1 | 2 | 3 | 5 | 2 | 4 | 5 | 35 | 30 |
| Anorexia | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 3 | 2 | 3 | 4 | 29 | 24.7 |
| Fever |  | 3 | 1 | 1 | 2 | 2 | 1 | 1 | 1 |  | 2 |  | 14 | 12 |
| Navel ill | 2 |  |  | 2 |  | 1 | 2 | 1 |  |  | 2 |  | 10 | 8.5 |
| conjunctivies | 1 |  | 2 | 2 |  |  |  |  | 2 | 1 | 1 |  | 9 | 7.7 |
| Pneumonia | 1 |  |  |  |  |  | 1 |  | 1 | 1 |  |  | 4 | 3.4 |
| Joint ill |  |  |  |  |  | 1 |  |  | 1 |  |  |  | 2 | 1.7 |
| blot | 1 | 2 | 3 |  | 1 | 2 | 2 | 1 |  | 2 |  |  | 14 | 12 |
| Total | 10 | 10 | 10 | 11 | 7 | 9 | 10 | 8 | 13 | 8 | 12 | 9 | 117 | 100 |

**3.6Clinical examination of the patient had done by two ways;**

**Close inspection:**

* Swelled navel area
* Pus and bloody discharge
* Maggot coming out
* Foul smell
* Swelled joint area

**Palpation:**

* Hard mass and pain
* Blood mixed pus niddle aspiration of pus from joint

**3.7. Presenting clinical signs:**

* The navel area was swelling with heat and pain.
* Pus coming out from the infected area.
* Raised temperature up to 105F.
* Animals were usually unable to stand, stiffed gait.
* Swelled joint area.
* In some cases myiasis in the navel area.

**3.8 steps for general correction of navel ill:**

The patient was restrained physically and placed dorsoventrally.

↓

The navel area was sterilized by using tincture of iodine.

↓

If the area was sealed by fibrous tissue then a small incision was given on the area.

↓

For drained out the pus manual pressure was applied.

↓

Tincture of iodine or potassium permanganate solution was applied in the area by using cotton holding with forceps and wash properly to destroy the pyogenic membrane.

↓

Finally a tincture iodine mixed gauge was left in the area without any suture to maintain proper drainage of the discharges. ↓

The local antibiotic was given in the area along with systemic antibiotics

**CHAPTER 4**

**4. RESULTS AND DISCUSSION**

**Occurrence of common diseases in dairy farms**

Among the diseases, occurrence of diarrhea was the highest (30%), followed by anorexia (24.7%), fever (12%), navel ill (8.5%), pneumonia (3.4%), conjunctivitis (7.7%), joint ill (1.7%) and blot (11.9%). Data regarding the overall diseases occurrence in neonatal calves in 12 farms have presented in fig. 5.1.

**Fig 5.1: demonstration of presence of common diseases in dairy farms.**

**Fig 5.2: Demonstration of presence of navel ill in dairy farms.**

Distribution of different demographic factors in case of overall diseases in table no. 5.1

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Variables** | **Category** | **Infected** | | **Total no. of cases** | **Percentage (%)** |
| Age | <3 weeks | 89 | | 117 | 74.2 |
| >3 weeks | 28 | | 117 | 25.8 |
| Sex | Male | 62 | | 117 | 53.2 |
| Female | 55 | | 117 | 46.8 |
| Breed | Cross breed | 82 | | 117 | 70 |
| HF | 24 | | 117 | 20.5 |
| RCC | 11 | 117 | | 9.5 |

Distribution of different demographic factors in case of navel ill in table no. 5.2

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Variables** | **Category** | **Infected** | | **Total no. of cases** | **Percentage (%)** |
| Age | <3 weeks | 8 | | 117 | 6.8 |
| >3 weeks | 2 | | 117 | 1.7 |
| Sex | Male | 10 | | 117 | 8.5 |
| Female |  | | 117 |  |
| Breed | Cross breed | 7 | | 117 | 6 |
| HF | 2 | | 117 | 1.7 |
|  | RCC | 1 | 117 | | 0.8 |

**Effects of age on diseases:**

Effects of age of calves on diseases have presented in Table 5.3. Calves of < 3 weeks (74.2%) were highly and significantly (p<0.05) affected with different diseases in compare to that of calves with > 3 weeks (25.8%) of age (Figure 4.3) prevalence of navel ill higher in < 3 weeks (6.8%) than > 3 weeks (1.7%).

**Table 5.3:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| diseases | <3 weeks | % | | >3weeks | % | |
| Diarrhea | 27 | 23 | | 8 | 6.8 | |
| Anorexia | 23 | 19.6 | | 6 | 5.1 | |
| Fever | 9 | 7.7 | | 5 | 4.4 | |
| Navel ill | 8 | 6.8 | | 2 | 1.7 | |
| Conjunctivitis | 7 | 6.1 | | 2 | 1.7 | |
| Pneumonia | 3 | 2.5 | | 1 | .8 | |
| Joint ill |  |  | | 2 | 1.7 | |
| Blot | 10 | | 8.5 | 4 | | 3.6 |
| Total | 89 | | 74.2 | 28 | | 25.8 |

**Fig 5.4.(1): Occurrence of diseases in calves regarding to age**

**Fig 5.4.(2): Occurrence of navel ill in calves in regarding to age**

**Effect of Sex on diseases:**

In the study, it was found that the infection rate was higher in male (53.8 %) than female (46.2%) where prevalence of navel ill higher in male calves (8.5) than female calves (0%). **Hungerford et al., (1991) & Susan et al., (1998)** observed that the males were highly susceptible to the infection than the females. The males were having urethral opening nearer to the navel area where as females are having the opening distended from navel region **(Hungerford et al., 1991)**. As a result, the navel area of males has more chance to be soiled by urine. The calculated result presented in a table (5.4)

**Table 5.4:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Diseases | Sick calves | Male | % | Female | % | |
| Diarrhea | 35 | 16 | 13.7 | 19 | 16.2 |
| Anorexia | 29 | 13 | 11.1 | 16 | 13.7 |
| Fever | 14 | 8 | 7 | 6 | 5.1 |
| Navel ill | 10 | 10 | 8.5 |  |  |
| Conjunctivitis | 9 | 4 | 3.4 | 5 | 4.2 |
| Pneumonia | 4 | 3 | 2.6 | 1 | 0.8 |
| Joint ill | 2 | 2 | 1.7 |  |  |
| Blot | 14 | 7 | 6 | 7 | 6 | |
| Total | 117 | 63 | 53.8 | 54 | 46.2 | |

**Fig5.5. (1): Occurrence of diseases in calves regarding to sex**

**Fig5.5 (2): Occurrence of navel ill in calves regarding to sex**

**Effect of Breeds on neonatal calf diseases**

The effects of breeds on disease occurrence has presented in Table 5.5. Results showed that occurrence of neonatal diseases in crossbred calves was significantly (p˂0.01) higher (70.2%) in comparison to HF (21.3%) and RCC (8.5%) (table5.5). the occurrence of diseases was significantly (p˂0.01) higher in cross breed than HF and RCC. Occurrence of navel ill is higher in cross breed 6.8 than HF (1.7%) and RCC (0.8%).

**Table5.5:**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Diseases | Cross breed | % | HF | % | RCC | | % |
| Diarrhea | 25 | 21.3 | 7 | 6 | 3 | 2.5 | |
| Anorexia | 22 | 18.8 | 5 | 4.2 | 2 | 1.7 | |
| Fever | 10 | 8.5 | 2 | 1.7 | 2 | 1.7 | |
| Navel ill | 7 | 6 | 2 | 1.7 | 1 | 0.8 | |
| Conjunctivitis | 5 | 4.2 | 3 | 2.5 | 1 | 0.8 | |
| pneumonia | 3 | 2.5 | 1 | 0.8 |  |  | |
| Joint ill | 2 | 1.7 |  |  |  |  | |
| blot | 8 | 6.8 | 4 | 3.4 | 2 | | 1.7 |
| Total | 82 | 70 | 24 | 20.5 | 11 | | 9.5 |

**Fig5.6 (1): Occurrence of diseases in calves regarding to breed**

**Fig5.6 (2): Occurrence of navel ill in calves regarding to breed**

This study suggests that several factors such as age, sex and breed have an important role in occurrence of diseases in neonates. Therefore, more attention should be given to proper management of calves to avoid/prevent diseases. Further study should be designed to improve calf’s health and to prevent economic loss causing from mortality of calves by changing the management system.

**CHAPTER 5**

**5. CONCLUSION**

Various diseases such as diarrhea, anorexia, fever, navel ill, conjunctivitis, pneumonia, joint ill and bloat were common in farm condition of Bangladesh. Within one month of birth, navel ill is a serious problem for calves. The calves remain at high risk to navel infection and mortality below one month of age. Male calves are more susceptible to navel ill because of the anatomy, bulls navels tend to dry slower than heifers and they are thus at more risk of navel ill. They have also more chance of contamination through urine. Farm management such as mud floor & not using antiseptic at the navel region after birth are the main causes of infection. Prevention is the key to this disease. Ensure that the cow calves in a clean environment can significantly reduce the risk of joint ill. Proper planning and preparation can prevent the build-up of disease that occurs in too many calving areas. Applying a disinfectant (such as iodine) to the navel can reduce the risk of bacteria entering via the navel, but it is no substitute for good hygiene. No amount of disinfectant can overcome being born in a dirty wet yard. Applying disinfectant two or three times can reduce the risk. It is also important to ensure that if calves are born in a nice clean environment that they have not moved to other pens or contaminated pastures until the navel has dried completely. Finally, like all diseases of young calves getting sufficient colostrums is essential. Ensure that all calves get a good suck in the first 6 hours of birth. If it is not possible ensure that they get at least 2 liters of colostrums as soon as possible. Beside this for prevention of navel ill hygienic measurement should have be taken by the farmer respectively.

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**APPENDIX**

**Questionnaire**

**Sl No. Date:**

1. Name of the owner & Address .........................................................................................

2. Name of the farm : .............................................................................................................

3. Description of the Animal : ..............................................................................................

a) Age………………......................…..b) Breed……........……….c) Sex………..........…..

d) BCS………………...................……e) Date of birth (approximately)………..................

f) Body temperature……………….......g) Breeding history………….................................

h) clinical sign........................................................................................................................

i)prismatic diagnosis ..............................................................................................................

4. From when you have seen this infection ...........................................................................

5. After birth of the calf have you use any antiseptic to the umbilical region of the calf……………......................................................................................................................

6. After birth colostrums eat or not ......................................................................................