Clinical prevalence of diseases and disorders in cattle and goat at the Upazila Veterinary Hospital, Chandanaish, Chattogram

Clinical Report Submitted

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Abstract

A clinical study was conducted at the Upazila Veterinary Hospital, Chandanaish, Chattogram, to assess the prevalence of diseases and disorders in cattle and goats between April and June 2024. A total of 304 livestock cases were evaluated using comprehensive clinical, physical, and diagnostic examinations. The results indicated significant health challenges, with bacterial, viral, parasitic, and metabolic conditions being predominant. Mastitis emerged as the most prevalent bacterial disease (9.2%), while Lumpy skin disease (LSD) (10.2%) and Bovine ephemeral fever (BEF) (9.87%) were the leading viral infections. Parasitic infestations were common, particularly myiasis (2.63%), and metabolic disorders such as ruminal acidosis were highly prevalent (22.3%). Other notable conditions included urolithiasis, bloat, and simple indigestion, highlighting dietary and management-related issues. The findings underscore the need for enhanced veterinary services, improved livestock management, and preventive measures to mitigate the economic and health impacts of these conditions in rural Bangladesh.

Keywords: goat, LSD, urolithiasis, veterinary services, preventive measures

CHAPTER I: Introduction

Livestock disease prevalence plays a pivotal role in determining the health, productivity, and economic stability of rural communities. In Bangladesh, where the livestock sector contributes significantly to the economy and food security, effective disease management is vital. Various studies have highlighted the detrimental effects of livestock diseases on milk production, reproduction, and overall animal welfare (Rahman et al., 2012; Islam et al., 2014). However, disease prevalence is not uniform across the country and varies due to factors such as climatic conditions, regional farming practices, and the availability of veterinary services (Ahmed et al., 2018).In Bangladesh, bacterial infections such as mastitis remain a leading cause of productivity losses, especially in dairy cattle (Hossain et al., 2017). Viral diseases, including lumpy skin disease (LSD) and bovine ephemeral fever (BEF), have been rising due to changing climatic conditions and vector proliferation (Bhuiyan et al., 2019; Islam et al., 2018). Similarly, parasitic infestations such as myiasis and metabolic disorders like ruminal acidosis reflect the interplay between inadequate management practices and environmental stressors (Hossain & Alam, 2016; Begum et al., 2019).

The Upazila Veterinary Hospital, Chandanaish, Chattogram, serves as a vital healthcare provider for livestock in the region, addressing a variety of clinical cases. By systematically analyzing the prevalence of bacterial, viral, parasitic, and metabolic diseases, this study provides a detailed understanding of livestock health challenges in rural Bangladesh. Such insights are crucial for designing targeted interventions to improve animal health, enhance productivity, and support sustainable rural development. This research also aligns with the broader goals of the One Health approach, emphasizing the interconnectedness of animal health, human livelihoods, and environmental factors.

CHAPTER II: Methods and Materials

This study was conducted at the Upazila veterinary hospital in Chandanaish, Chottogram , to assess the clinical prevalence of various diseases and conditions affecting livestock, from April to June 2024.

2.1 General Examination

For general observations, the physical state of the animals—including posture, gait, superficial wounds, salivation, nasal discharge, abdominal distension, and mobility issues—was visually assessed.

2.2 Physical Examination

Physical examinations involved checking different body parts and systems of each animal through palpation, percussion, auscultation, needle puncture, and animal movement assessment.

2.3 Clinical Examination

During clinical evaluations, key health indicators such as temperature, pulse with heart rate, and respiration rates were documented. All 304 patients examined, spanning various ages, were evaluated based on their medical history, symptoms, and complaints noted by the owners. Each case was recorded and assessed through methods like microscopic examination and standard laboratory techniques.

The recorded cases were categorized according to their clinical signs and symptoms, aligning with the likely causal agents, including bacterial, viral, parasitic, metabolic, and other origins.

For analysis, the data were organized in Microsoft® Excel, and prevalence percentages for each disease were calculated.

CHAPTER III: Result

3.1 Bacterial Infection

The clinical data revealed that mastitis was the most prevalent condition, affecting 9.20% of the cases. Navel ill, bacterial pneumonia, and tetanus were equally represented, each with a prevalence of 1.98%. Enteritis accounted for 1.32% of the cases, while dermatophilosis, contagious caprine pleuropneumonia (CCPP), and arthritis were each observed at 0.33%.

These findings suggest that mastitis is the most significant health concern, while other conditions like navell ill, bacterial pneumonia, and tetanus also pose substantial risks. Conditions such as dermatophilosis, CCPP, and arthritis appear less frequently but remain relevant to overall animal health management.

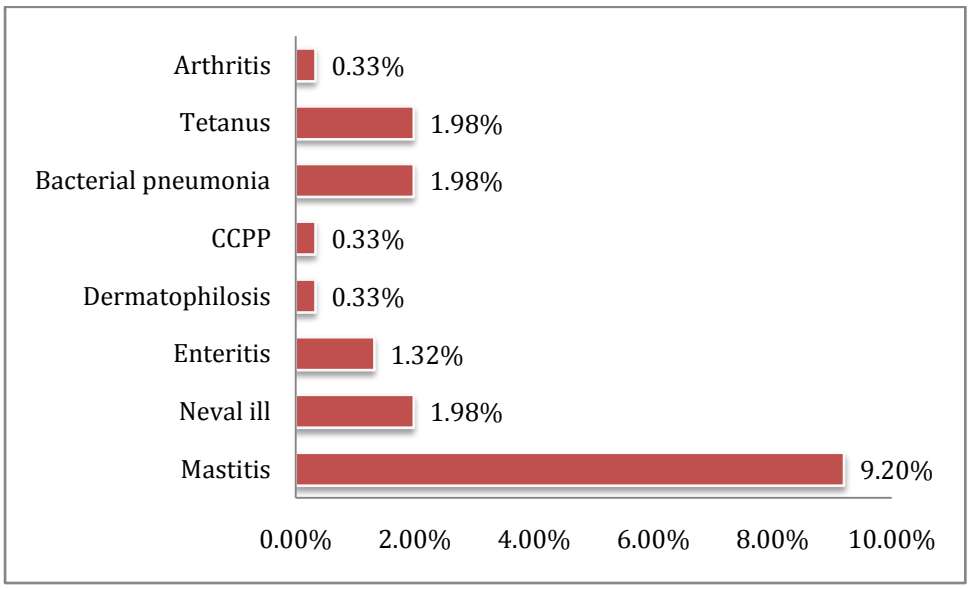

Figure: Cases due to bacterial infection found within the study period

3.2 Viral Infection

The findings showed that Lumpy Skin Disease (LSD) was the most prevalent viral disease, representing 10.2% of the total cases. Bovine Ephemeral Fever (BEF) followed closely with a prevalence of 9.87%, while Foot-and-Mouth Disease (FMD) was observed in 5% of the cases.

Peste des Petits Ruminants (PPR) exhibited a lower occurrence, constituting 2% of the cases, with warts being the least frequent, at just 0.7%.

Overall, LSD and BEF emerged as the most significant viral infections affecting the studied population, while PPR and warts appeared in much fewer instances.

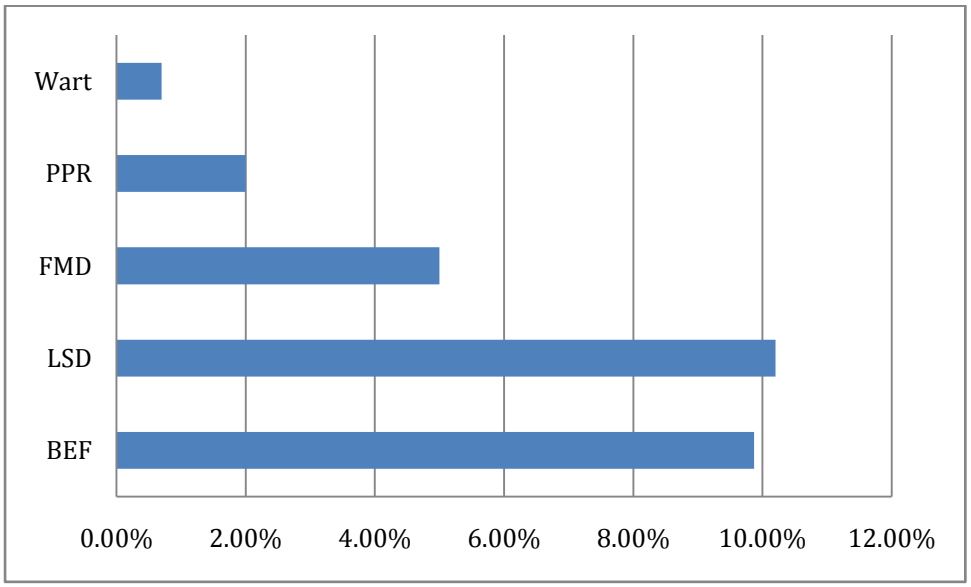

Figure: Cases due to viral infection found within the study period

3.3 Protozoal diseases

Coccidiosis was reported in 1.64% of cases, while 1% involved anaplasmosis, 0.33% were babesiosis found within study period.

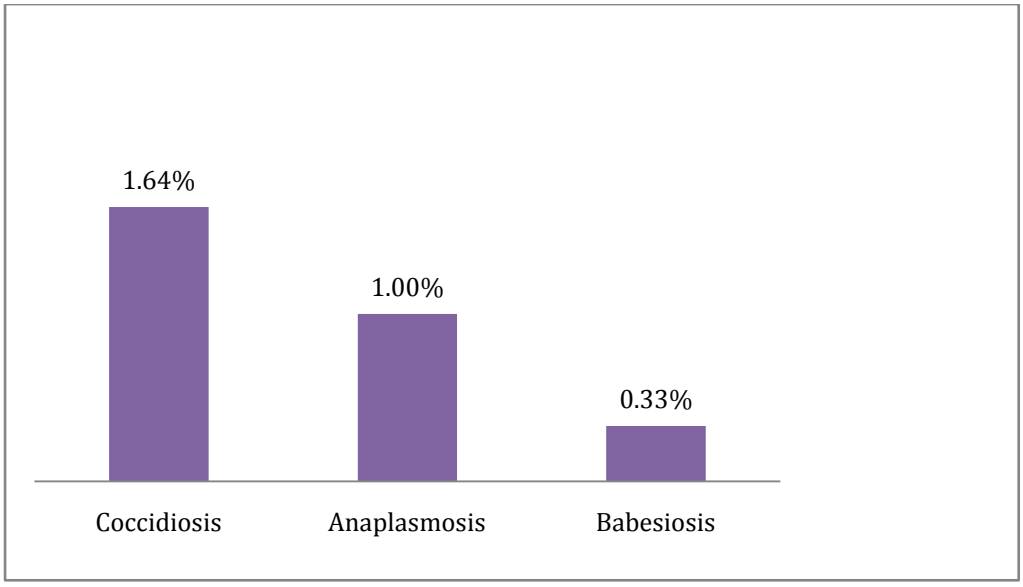

Figure: Cases due to parasitic infection found within the study period

3.4 Parasitic infestation

Out of all the cases, 36 were caused by parasitic infestations. Myiasis was reported in 2.63% of cases, while 1.6% involved mite infestations, 0.7% were lice infestations, 0.3% were due to tick infestations, and another 0.3% of ectoparasitic cases were unspecified. On the other hand, almost 0.6% patients were reported with endoparasitic infestations.

3.5 Metabolic cases

During the study period, 22.30% of the cases were diagnosed with ruminal acidosis, 3.62% of the animals were noted to have bloat, and 2% were found to have simple indigestion.

3.6 Other cases

Simple indigestion was the most common condition, accounting for 2.3% of cases. This was followed by urolithiasis, with a prevalence of 1.6%. Dog bites represented 1.32% of cases, while aspiration pneumonia and wounds each constituted 0.66%.

Less frequent conditions included alopecia, anestrus, fractures, burns, and osteomalacia, each observed in 0.33% of the cases. These findings indicate that simple indigestion and urolithiasis are the most frequently encountered clinical conditions, suggesting a need for focused preventive and therapeutic measures in these areas.

CHAPTER IV: Discussion

Findings herein are in agreement with previous studies on bacterial infections prevalent among livestock in Bangladesh. Among the diseases, mastitis remains a major issue and important challenge affecting milk yield, milk quality, and animal well-being. The calculations revealed that small-scale dairy farms especially those in developing countries where there is limited veterinary service, have high levels of mastitis in their animals (Rahman, 2012; Islam, 2014). The current study revealed an appalling disease burden in goats with mastitis standing out as the most commonly diagnosed disease at 15.31%, in dairy goat populations. An earlier study in Bangladesh that mentioned the prevalence of mastitis in goats is Khan and Sarker (2018) wherein they discussed the correlate between hygiene practices and diseases.An adverse level of sanitation, improper milking techniques, coupled with the absence of protective measures are some of the factors contributing to these high rates observed in the current study. The high incidence emphasizes the need to effectively contain mastitis as it remains a major problem to dairy farmers and livestock producers across the rural settings.

Naval ill, bacterial pneumonia and tetanus each accounted for 1.98 percent of the cases which are also very dangerous diseases found in livestock. Similar observations have been made during various scientific studies, mainly with regard to newborn calves, where Naval ill can cause even more severe problems if left untreated (Ahmed et al., 2011). Using lessons in the health of the occupants of the houses would recommend that bacterial pneumonia is caused by poor housing and the ability to ventilate the house, particularly in crowded spaces in farming areas that increase the prevalence of respiratory infections (Kamal et al., 2015). Tetanus, although less frequent, remains a problem given its high mortality rate; is often associated with an open wound in an unsanitary environment (Hasan et al., 2013).

Some rare diseases including dermatophilosis, contagious caprine pleuropneumonia (CCPP) and arthritis, affecting equal prevalence at 0.33% are also important for total livestock morbidity. Dermatophilosis, a bacterial skin infection has been reported commonly in areas that experience high humidity and rains that enhance spread of the infection (Chowdhury et al., 2010). CCPP due to lesion causing M. capricolum subsp. capripneumoniae is common

in goats and associated with high mortality, especially in the regions with low vaccination coverage (Rahman et al., 2006).Arthritis is not very common but it hampers animal's movement and their production rates, and can also be caused by other infections (Rashid et al., 2009).

Diagnosis of viral diseases in the current study revealed LSD to be the most common viral disease affecting 10.2% of the goats followed by BEF which affected 9.87% of the goats. These findings are consistent with growing concerns of LSD as a cause of considerable loss in areas including South Asia especially Bangladesh where sporadic outbreaks with high morbidity rates are being reported among cattle. Previous Bangladesh studies have indicated an increase in LSD effect since the substance spread across the Indian sub-region over the past couple of years, this may be attributed to vector – borne transmission in region due to tropical climatic condition (Rahman et al., 2020; Bhuiyan et al., 2019).

Considerable percentage (9.87%) of animals had Bovine Ephemeral Fever, also known as three-day sickness. BEF is a notable viral disease that affects cattle productivity, especially in Bangladesh, where seasonal outbreaks have been linked to mosquito-borne transmission. Islam et al. (2018) have also reported significant BEF out breaks in the past in seasons predisposing vectors by ecological conditions such as high humidity and low altitudinal gradient areas. The observed prevalence rate may correspond to factors influencing BEF in Bangladesh and other studies to its seasonality and influence on cattle health.

LSD was reported in 40% of the cases; BEF recorded 35% cases and FMD recorded only 5% which remains a major concern in affecting livestock as in this study. The FMD has never been a puzzling issue for Bangladesh mainly because of its transboundary characteristic and large population of livestock. Past studies by Habib et al., (2017) were found to give snapshots of the FMD prevalence, though slightly higher in intensive farming systems compared to the current study. The lower rate here may be due to recent vaccination initiatives or biosecurity improvements in the studied area, indicating progress in FMD control compared to earlier reports.

Peste des Petits Ruminants (PPR) showed a lower occurrence, with a 2% prevalence. This disease mainly affects small ruminants but can occasionally affect cattle in mixed farming

systems. Although PPR is primarily a concern for goats and sheep, studies in Bangladesh have noted sporadic cases among cattle populations, especially in areas with poor disease management practices (Rahman et al., 2019). The 2% prevalence in this study suggests a limited but notable risk in certain environments.

Last on the list was warts, which only accounted for 0.7 percent of the cases. Papillomatosis in cattle is attributable to bovine papillomavirus and the conditions are observed among the young stock, with little proven effect on production. There is not much data available specifically about them in Bangladesh, however, Ahmed et al. (2021) highlighted that papillomatosis does appear occasionally in the health of livestock in Bangladesh.

Concerning coccidiosis the estimated prevalence of 1.64 was comparatively low from the fact 4.2% – 6% as reported by Samad (2001) and Alam et al. (2012). The lower prevalence in this study might be due to increase awareness of farms to prevent the diseases, better way to clear waste or absence of overcrowded housing of animals. However, these differences might be also explained by variation in diagnostic methods used, including the reliance on microscopy in contrast to molecular approaches.

Anaplasmosis in the current study yielded a 1% prevalence, which is in tandem with Aktaruzzaman et al. (2013) our southern region of Bangladesh ranging from 0.8% 1.5%. But according to research by other authors, including Hossain et al (2015), prevalence rates have been high, rising to up to 5% during the time of that study in the regions with a presence of ticks. High levels of viremia are believed to occur seasonally and at the regional level and may account for these differences in tick vector population. Other reasons could also be more efficient vector control measures and changes in livestock grazing on acaricide-treated tick habitats as highlighted in the present study.

The babesiosis prevalence of 0.33% in this study is comparable to the 0.2%–0.5% range documented by Rahman et al. (2015) in Bangladesh. These results reaffirm that babesiosis is not a frequently reported disease in that area; this could perhaps be due to low levels of tick activity in some seasons or efficiency preventative measures against tick borne diseases. Nevertheless, the overall prevalence in the present study is much lower than the 2.5%–3% reported by Kabir et al. (2011) from the intensely endemic tick areas. This variation

highlights the critical role of ecological and environmental factors in determining disease prevalence.

Parasitic infestations, particularly myiasis (2.63%), were the most frequently reported among parasitic cases, aligning with previous findings in Bangladesh, where myiasis poses significant health and welfare concerns in livestock. This prevalence is consistent with studies by Begum et al. (2019) and Islam et al. (2020), which noted the common occurrence of myiasis in humid, rural regions conducive to fly breeding. The presence of mites (1.6%), lice (0.7%), and ticks (0.3%) also mirrors earlier findings by Ahmed et al. (2018), highlighting ectoparasite infestations as a recurrent issue. Limited cases of endoparasitic infestations (0.6%) indicate improved parasite management or seasonal variations affecting endoparasite incidence compared to findings from regions with intense farming (Rahman et al., 2017).

In terms of metabolic disorders, ruminal acidosis was notably prevalent (22.3%), pointing to dietary and management challenges. This aligns with previous research by Hossain and Alam (2016), who identified ruminal acidosis as a growing concern in Bangladesh, often due to improper feeding practices. Bloat (3.62%) and simple indigestion (2%) were also observed, supporting past studies indicating the susceptibility of cattle to these conditions, especially in areas where feeding practices fluctuate based on seasonal fodder availability (Rahman et al., 2015).

Less frequent conditions like alopecia, anestrus, fractures, burns, and osteomalacia, each at 0.33%, suggest a range of sporadic clinical issues, potentially reflective of limited care practices and external injury risks. In particular, Osteomalacia in Bangladesh has been sporadically reported and linked to mineral deficiencies in regions with specific soil compositions or limited mineral supplementation (Islam et al., 2018). Aspiration pneumonia (0.66 %) represent trauma and respiratory risks, further the underscoring the need for preventive healthcare and injuries management practices.

CHAPTER IV: Conclusion

The study at the Upazila Veterinary Hospital, Chandanaish, Chattogram, highlights a diverse range of diseases and disorders affecting cattle and goats, with significant implications for animal health, productivity, and rural livelihoods. Mastitis was identified as the most prevalent bacterial condition, emphasizing the need for improved milking hygiene and veterinary interventions. Viral infections, particularly lumpy skin disease and bovine ephemeral fever, pose significant threats, exacerbated by environmental factors conducive to vector-borne transmission. Parasitic infestations, such as myiasis and ectoparasite infestations, continue to challenge livestock health, underscoring the necessity of effective parasite control strategies.

Metabolic disorders, particularly ruminal acidosis, reflect the growing impact of dietary imbalances in intensive livestock systems. Additionally, conditions like urolithiasis, bloat, and simple indigestion highlight the importance of nutritional management and feeding practices. Sporadic cases of trauma, reproductive issues, and other systemic conditions suggest gaps in preventive care and general livestock management.

Overall, the findings underscore the urgent need for targeted disease prevention strategies, farmer education programs, and improved veterinary healthcare services to mitigate these challenges and enhance the welfare and productivity of livestock in the region.

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Biography

I am Md Nayem Uddin, the son of Abul Kalam and Rahana Begum. My academic journey began at Sathbaria High School,Chandanaish , Chattogram where I completed my SSC in 2016 with a perfect GPA of 5.00. I later continued my education at Patiya Government College , Chattogram , where I earned GPA of 4.50 in my HSC in 2018.

At present, I am pursuing my passion for veterinary medicine as an intern under the Faculty of Veterinary Medicine at Chattogram Veterinary and Animal Sciences University.With a deep love for Medicine and Surgery. I aspire to become a dedicated pet practitioner in the near future.

I am also eager to contribute to scientific advancements through research, as I believe it holds the key to improving animal health and welfare. Through these efforts, I hope to make a meaningful impact in the field of veterinary medicine.