**CHAPTER – I**

**INTRODUTCTION**

Bangladesh is an over populated, rural and agrarian country in the world and livestock has been an important component of the mixed farming system practiced in Bangladesh for centuries. About 87% of our population is employed in agriculture and livestock farming and Twenty percent people are involved in livestock sector as permanent occupation (BBS, 2010). The contribution of Livestock in the magnitude of Gross Domestic Product (GDP) is about 16.23 % in Bangladesh (BBS, 2008). But the livestock diseases and disorders of animals are the most important hindrance towards livestock development in our country. There are about 22.53 million cattle and 14.69 million goats in our country (DLS, 2008-2009). Most of the animals are weak, emaciated non satisfactory productive performance due to mainly malnutrition and diseases.

Hides and skins, the basic raw materials of leather industries, are obtained as by-products of livestock industries. Unlike others, it is a constant source of export earnings and contributes about 10.7% of the total export earnings. However a large proportion of the materials is downgraded and rejected by their defects. An annual (1990-91) economic loss of Taka 818 crores or US $ 220.95 million (cattle US $ 194.5 m., buffalo US $ 1.9 m., goat US $ 24.1 m., sheep US $ 0.5 m) was estimated to be associated with leather defects in Bangladesh (Dey and Nooruddin, 1993). Bangladesh has a fairly large livestock population to support a strong and growing tanning industry. Cow hides account for 63.98% of the production, goat skins for 32.74% and buffalo makes up the rest (Export Promotion Bureau). The current output in Bangladesh is about 200 million sq.ft. of leather annually (Hide and Skin Merchants Association (HSMA), Survey report.2005, Dhaka, Bangladesh).

Skin diseases are the major cause of hindering the development of livestock population in Bangladesh. Skin diseases also keep impact on tannery sector; reduce the market value of hides & skin. Skin diseases are widely prevalent in Bangladesh and produce a substantial economic loss. The quality of tanned leather is greatly reduced by various skin diseases (Coles, Hadly, 2003). They also affect the health and productivity of livestock.

The tropical environment of Bangladesh creates a favorable condition for the easy growth of micro- organism and parasites. Skin diseases are very common in ruminants both rural as well as urban areas of Bangladesh. A wide variety of skin diseases are found at field levels, but very few of them can be confirmed by laboratory diagnosis. Moreover, laboratory diagnosis facilities are limited at field level. From my two months of field experience at Upazila veterinary Hospital, it has been seen that skin diseases are diagnosed mainly by clinical signs, taking clinical history of patients, age, animal’s management, etc. The common skin disease conditions are:

1. **Diseases of the epidermis and dermis:**
2. Pityriasis
3. Parakeratosis
4. Hyperkeratosis
5. Pachydermia
6. Impetigo
7. Urticaria
8. Eczema
9. Dermatitis
10. Photosensitization.
11. **Diseases of the hypodermis / subcutis:**
12. Sub cutaneous edema
13. Angioneurotic edema
14. Emphysema
15. Sub cutaneous
16. Sub cutaneous abscess
17. Lymphangitis
18. **Other diseases of the skin:**
19. Alopecia
20. Burns
21. Yoke gall
22. Cutaneous neoplasm
23. Congenital defects

Skin diseases hamper production of animals by various ways such as: mite infestation produce scales, alopecia, itching, erythema, hyperkeratosis; lice produce marked itching, irritation, formation of erythematous macula’s, dermatic lesions and anemia incase of heavy infestation. Lice, mites also create marked inanition that leads to weakness and poor health. Dermatophilosis, dermatophytosis and hump sore produce crust formation, alopecia and hyperkeratosis in the skin of animals.

Rural people are not so much conscious about livestock skin problem. So, it is a common phenomenon that their animals always having skin diseases either to a greater or lesser extent. But when the condition turn into severe condition, then they take the animal to the hospital. So, initially when major clinical signs were appeared, it is beneficial for the veterinarian to diagnosis and treatment.

Veterinary hospital is an ideal and reliable source of information about animal diseases and their solution. People from the neighboring areas bring their sick animals to the Veterinary hospital every day. Analysis of the case record gives a comprehensive idea about the disease problems at local areas..

Therefore my study was undertaken at **Upazila Veterinary Hospital, Sitakunda, Chittagong** with the following objectives:

* To know the prevalence of skin diseases of ruminants (cattle & goat)

To know the epidemiology of the diseases.

**CHAPTER – II**

**MATERIALS & METHODS**

**2.1. Study area and Duration:**

The study was conducted during my internship placement from March 2017 to July 2017.

**2.2. Clinical cases and epidemiological data:**

Domesticated ruminants (cattle & goats) under Sitakunda upazila, Chittagong were considered to be reference population. During my two months n study periods about 115 animals (cattle =48, goats= 67) were treated in Upazila Veterinary Hospital due to different disease conditions. Among them animals suffering from total skin disease were 29 where cattle12 and goat = 17 in number.

The necessary information required to the diagnose the skin diseases were collected directly from the owner of the animal using a questionnaire. The questionnaire was designed to gather the information regarding the demographic information of the animal e.g. (age, sex, body weight, breed, color, and species), socio-economic status of the farmer (farmers occupation, monthly income), patient data (duration of illness, history of previous treatment, number of infected animal, body condition), management system (feeding, housing, vaccination, hygienic measurement), and owner complain.

### The skin diseases were diagnosed by physical examination, clinical findings of diseases condition and laboratory diagnosis.

### 2.3. Diagnosis

### 2.3.1 Physical Examination:

### The animals were examined individually using dermatological examination techniques of taking history, close inspection, palpation, parting of hair coats and itch reflex (Kral and Schwartzman, 1964). The signs, number, location and physical characteristics of lesions viz, siz

### e shape, color were recorded.

**2.3.2 Working case definition** : The case was considered as skin disease in the present study when the animal registered with followings:

**Present clinical sign:**

* The animal having rough hair coat
* Severe pruritis.
* Alopecia
* Inappitance.
* Thickened and corrugated skin.
* Grayish-black, scaly
* Some lesions consists of firm, raised, oval nodules, creamy pus was expelled from most of the nodules on squeezing.
* The lesions were observed in the ventral abdomen, thigh, neck, shoulder, poll, costal area, face, gluteal region, back, tail, and ear, hind legs, fore legs, eyelid, and inguinal region.

### 2.3.3 Laboratory Examination:

### Examination of skin scraping for isolation and identification of arthropod parasites was done by following conventional technique of Veterinary Entomology (Rahman and Akteruzzaman, 2001). Diagnosis of the skin diseases was made on the basis of interpretation of epidemiological features, history, clinical findings, Morphology of the specimen from skin scrapings digested with 10% KOH solution and examined under microscope.

### Examination of skin scraping and hair for isolation and identification of dermatophytes was made by following procedure described by (Nooruddin and Sing, 1987).

### 2.3.3.1 Procedure

### A) Direct KOH Method:

### At first skin scraping was taken from the suspected case

### Then placed on glass slide

1 drop of 10% KOH was added

Specimen was allowed to stain for few minutes with gentle warming

Microscopic examination was revealed hyphae and

Spores (*Trichophyton spp*) in the infected materials.

**B) Sedimentation Method:**

Skin scraping was taking from suspected case

Then the skin scraping was placed in glass test tube

Treated with 10% KOH

The treated materials were heated(not boiling) gently till the skin debris is digested.

The digested material was centrifuged at 3000RPM for 5 minutes

The sediment was spreaded over the glass slide and examined under low power of microscope.

**2.4 Treatment**

**Table: Treatment schedule used for different kinds of skin diseases at UVH**:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Name of diseases condition** | **Generic name of the drug** | **Trade name and Name of the company** | **Dose** | **Route of administration** | **Duration** |
| Lice infestation (Pediculosis) | Ivermectin1% | Inj. Amectin  Acmi drug | 0.2mg/kg b.wt | S/C | SD |
| Mite infestation (Mange) | Ivermectin1% | Inj. Ivermec | 0.2mg/kg | S/C | SD |
| Humpsore (Stephanofilariasis) | Ivermectin1%  Levamisol Hcl: 600mg. | Inj. Amectin  Bol. Technomysol | 0.2mg/kg  7.5mg./kg | S/C  Orally | SD  5 days |
| Alopecia | Antihistami-nic Drug  Promethazine Hcl 50mg/ml  Zincsulph-ate 20% Iodine .25% | Inj.Astavet  D-zinc | 0.2mg/kg  5 to 10 gm/day | IM  orally | 5 days |
| Dermatophytosis (Ringworm) | Salicylic acid 3%,  Benzoic acid 6% and Vaseline | Whitfield ointment | 3% Solution  6% Solution | Topically | 7 days |
| Papillomatosis | Lithium antimony  Thiomalate  Autohaemotherapy | Inj. Antheomalin | 15-20 ml/cow.  10-15  ml/cow | I/M  I/M | 5 days intervel at 5 days |
| Myiasis | Oil of turpentine  OTC-100mg/ml | Inj.Renamycin | 10mg/kg | Dressing | Daily |
| Contagious ecthyma | Potash  Borax +honey  OTC | 10% Solution | Adlibitum  1ml/10kg | Topically  I/M | Until recovery  5 days |
| Yoke gall | Antibiotic  OTC | Inj.Tetravet 10ml | 1% ointment  1ml/10kg | Topically  IM | Until recovery  5days |
| Bur n | .1%Acriflavin  Antihistaminic drug  PromithazineHcl  Antibiotic  OTC | Inj.Astavet  Inj.Tetravet | .1%solution  2mg/kg  1ml/10kg | Topically  IM  IM | 5days  7days |

SD = Single Dose

IM = Intramuscularly

SC = Subcutaneously

Inj. = Injection

**2.5 Data Analysis**

Data were entered into Microsoft office excel-2007,USA and then exported to STATA version -13(STATA Corporation, College Station, Texus, USA) for statistical analysis. Descriptive analysis was performed on the data of skin diseases in relation to different factors. Results are presented as frequency and percentage of skin diseases against each category of factor.

8



**Figure 1: Collection of skin scraping Figure 2: examination of sample**

**CHAPTER – III**

**RESULTS**

**Proportionate prevalence of skin diseases in ruminants:**

The overall proportionate prevalence of skin disease was 25.21% (N=115). A total of 67 cattle and 48 goats were treated where the skin diseases affected animals were 12(17.91%) , 17(26.98% ) in cattle and goat respectively.

**Table 01: Different types of skin diseases in cattle and goats:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Name of the diseases condition** | **Cattle** | **Goat** | **Total** |
| Lice infestation (Pediculosis) | 2 | 1 | 3 |
| Mite infestation(Mange) | 4 | 7 | 11 |
| Hump sore (Stephanofilariasis) | 1 | \_ | 1 |
| Alopecia | 1 | 3 | 4 |
| Myiasis | 1 | 2 | 3 |
| Dermatophytosis (Ringworm) | 2 | \_ | 2 |
| Papillomatosis | - | \_ | - |
| Contagious ecthyma | - | 4 | 4 |
| Yoke gall | 1 | \_ | 1 |
| Burn | - | \_ | - |
| Total | 12 | 17 | 29 |

In table:2 it was observed that lice and mite infestation was 2(66%), 1(33.33%), and 4(36.36%), 7(63.63%) in cattle and goat respectively. In other case hump sore and alopecia 1 (100%), 0(0.0%) and 1(25%), 3 (75%) in cattle and goat was affected respectively. In case of Myiasis and Dermatophytosis 1(33.33%), 2(66.66%) and 2(100%), 0(0.0%) in cattle and goat respectively. In Papillomatosis and contagious ecthyma 0(0.0%); 0 (0.0%) and 0(0.0%), 4(100%). In Yoke gall and burn 1(100%); 0(0.0%) and 0(0.0%), 0(0.0%) in cattle and goat respectively.

**Table 2: Frequency Distribution of different types of skin diseases in different species:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name of Diseases | No. | Cattle (%) | Goat (%) | Total no. of affected animals |
| Lice infestation (padiculosis) | 3 | 2(66.66%) | 1(33.33) | 3(10.34%) |
| Mite infestation (Mange) | 11 | 4(36.36%) | 7(63.63%) | 11(37.93%) |
| Humpsore (Stephanofilariasis) | 1 | 1(100%) | - | 1 (3.4%) |
| Alopecia | 4 | 1(25%) | 3(75%) | 4(13.86%) |
| Myiasis | 3 | 1(33.33%) | 2(66.66%) | 3(10.34%) |
| Dermatophytosis | 2 | 2(100%) | - | 2(6.89%) |
| Papillomatosis | 0 | - | - | 0% |
| Contagious ecthyma | 4 | - | 4 (100%) | 4(13.79%) |
| Yokegall | 1 | 1(100%) | - | 1(3.45%) |
| Burn | 0 | - | - | 0% |
| Total | 29 | 12 | 17 | 29(100%) |

The remaining result showed in table-03.It was also observed that the highest estimation was observed ectoparasite infestation 67.24% followed by nutritional deficiency 15.52%, viral infestation 6.89%, fungal infestation 5.17% and other injury 5.17%.

**Table-03: Frequency distribution of skin diseases according to different etiological agent.**

|  |  |  |
| --- | --- | --- |
| Name of causal agent | No. of animal affected | Percentage of disease |
| Ectoparasite | 18 | 62.05% |
| Fungus | 2 | 6.90% |
| Virus | 4 | 13.80% |
| Nutritional deficiency | 4 | 13.80% |
| Other injury | 1 | 3.45% |
| Total | 29 | 100% |

**CHAPTER-IV**

**DISCUSSION**

The previous study of the prevalence of skin diseases in cattle was 62 % (13,421cattle) and goat was 28.8%(5,771goats) (Nooruddin, A.S.Dey, 1993).But the result of this study is 17.91% (12 cattle) and 26.98%(17 goats) which did not agreed with the previous study. There is a great variation between these two studies. The reason for this variation would be the ecological variation, the types of soil, seasonal variation and overall the small sample size. Presence of fly larvae in animal body could reflect a present exposure to the disease myiasis (Serra-Freire and Mello,2006; Hall & Smith, 1998). In this study,3 myiasis cases were observed on which 66% were goat, 33.33% were cattle, whereas Sergio I (2007) recorded the most infested host for myiasis were cattle and goat (46.4%). The overall prevalence of myiasis was 10.34% among 3 cases in ruminants which is comparable to the result of Giangaspero *et al*. (2011), Alahmed (2004) who reported 3% out of 3129 in Italy, 2% out of 3712 cases in Riyadh Region respectively. Nooruddin & Dey (1993) who reported 0.7% incidence of papillomatosis in cattle from Bangladesh which is higher then our study(0.0%).The prevalence of yoke gall in cattle was 0.4%( Nooruddin and Dey,1990) which is also not simillar to our result(3.45%).Moreover,Ivermectin injection is frequently used in the treatment of skin diseases( Amalendu, C.2005*)* whichis aslo used commonly for skin diseases in UVH, Sitakunda due to its availability*.*

**CHAPTER-V**

**Limitations**

The study has following constraints –

* Small sample size
* Data of affected animals was not stored properly in UVH.
* Proper lab Diagnostic kits are not available in UVH.

**Chapter-VI**

**CONCLUSION**

From the study it can be concluded that the prevalence of skin diseases is 17.91% in cattle and 26.98% in goat. It was revealed that a skin disease is a great problem in case of domestic animals. Skin disease plays a vital role on health and productivity of animals, lather quality of hides and skin in Bangladesh. Due to short duration of study period, it’s not possible for me to establish the relationship of disease with seasonal factor. Season is an important factor for different parasitic diseases causing lesion on skin. Moreover, due to small number of sample size study result may not accurate.From this study it can be said that,Ivermectin (1%) is the drug of choice for the treatment of skin disease.

Control of skin disease is essential for the improvement of national economy.so that, special attention should be taken for rearing the livestock as profitable business. Several types of problems can be overcome by taking following necessary steps such as:

1. Proper hygienic measures in animal shed.
2. Regular de-worming at 4 months interval.
3. Isolation of diseased animal from the healthy stock
4. It should motivate the farmers for taking veterinarian’s suggestion at any disease.

Farmers should avoid treatment from quack.

**REFERENCES**

A.K.M.A.Rahman and M.Aktaruzzaman (2001). Association of skin diseases with demographic variables in cattle. *Bangladesh Veterinarian (18(1):79-81*.

Alahmed F., Kumsa B. and Degefu H. (2004). *Oestrus ovis* larval myiasis among sheep and goats in Central Oromia, Ethiopia; [Trop Animal Health Prod.](file:///G:\Report%20file%20%28Don%27t%20touch%29\Report%20files\Clinical%20report\Myiasis%20%28Internet%29\New%20folder\Animal%20related\19882360.htm) 42(4):697-703.

Amalendu Chakrabarti, A. (2005), Common Ectoparasitic Infestation in Animals. A textbook of preventive veterinary medicine, Third revised and Enlarged edition, kalyata, publishers. Ludhiana, New Delhi, Noida, Hyderabad, Chennai, Kolkata, Cuttack. PP. 663-667.

Coles, G.C. Hadley, P.J; Milnes , A.S. Green, L.E; Stosic, P.J.Garnsworthy, P.C. (2003). Relationship between lice infestation and leather damage in cattle; *veterinary Record, 153-259.*

[Giangaspero A](http://www.ncbi.nlm.nih.gov/pubmed?term=Giangaspero%20A%5BAuthor%5D&cauthor=true&cauthor_uid=21030155), [Traversa D](http://www.ncbi.nlm.nih.gov/pubmed?term=Traversa%20D%5BAuthor%5D&cauthor=true&cauthor_uid=21030155), [Trentini R](http://www.ncbi.nlm.nih.gov/pubmed?term=Trentini%20R%5BAuthor%5D&cauthor=true&cauthor_uid=21030155), [Scala A](http://www.ncbi.nlm.nih.gov/pubmed?term=Scala%20A%5BAuthor%5D&cauthor=true&cauthor_uid=21030155), [Otranto D](http://www.ncbi.nlm.nih.gov/pubmed?term=Otranto%20D%5BAuthor%5D&cauthor=true&cauthor_uid=21030155) (2011). Traumatic myiasis by Wohlfahrtia magnifica in Italy. [Vet Parasitol.](http://www.ncbi.nlm.nih.gov/pubmed/21030155); 175(1-2):109-12.

Kral, Eand Sehwartzman, R.M.(1964) . Veterinary and comparative Dermatology. 1st edition J.P.Lipincott co. Philadelphia.

Nooruddin, M.and Dey, A.S. (1993) Further study on the prevalence of skin diseases in domestic ruminats in Bangladesh*. The Bangladesh Veterinariant 7(2). 75-81.*

Noorduddin, M, and Singh, B. (1987) . Dermatophytosis in buffaloes, cattle and their attendants

Mykosen.30:594-600.

Sergio EB, José DE, Angel BC, Franklin C, Janina S, Sabina B and Enrique M (2007). Incidence of myiasis in Panama during the eradication of Cochliomyia hominivorax. Sección de Entomología Médica, Instituto Conmemorativo Gorgas de Estudios de la Salud, PO Box 0816-02593, Panamá.

Serra -Freire NM, Mello RP. (2006). Entomologia & Acarologia na Medicina Veterinária. First ediiton. Editora L. F. Livros de Veterinária Ltda.

**ACKNOWLEDGEMENT**

*All the praises are due to the Almighty* ***Allah****, the creator and soul authority of universe, who enabled me to complete this work successfully.*

*I express my sincere and humble gratitude and immense indebtedness to my reverend teacher and internship supervisor Professor Dr. Tania Ferdushy Dept. of Pathology and Parasitology , Chittagong Veterinary and Animal Sciences University for her valuable advice, suggestions and kind co-operation during the study period.*

*I am thankful to the* ***Dr. Shahjalaj Muhammad Yunus,******Upazila Livestock Officer ,*** *Sitakunda,**Chittagong, for his kind co-operation, valuable advice and suggestions.*

*Lastly, but not least, the author extended his appreciation to all of my teachers and parents who have inspired me in various ways.*

**The Author**

**November, 2017**

**Biography**

Jahangir Mahmood, Son of Jahangir Alam Chowdhury and Sultana Rajia. He is an interned veterinary doctor under the faculty of Veterinary Medicine (FVM) in Chittagong Veterinary and Animal Sciences University (CVASU). He passed his Secondary School Certificate (SSC) Examination in 2008 followed by Higher Secondary Certificate (HSC) Examination in 2010 from Chittagong board. In future he would like to do Research work about animal welfare, epidemiological study and Zoonotic diseases those take public health significance in the world regarding one health constitution.