Identification of Major Health Problems of Abergelle Goats in Selected District of Wag-Himra Zone, North Ethiopia

[1]Abebe Tesfaye Gessese and [2]Natnael Teshager

[1]University of Gondar, Unit of Biomedical Sciences, Po Box 196, Gondar, Ethiopia
[2]Sekota Dry Land Agricultural Research Center, Livestock Technology Supply Directorate

Abstract: A retrospective study of goat's disease was undertaken in wag himra zone at Aybra site (Sekota) and Saziba village (Abergelle)) from April 2010 to August 2013 to identify major diseases and associated risk factors of Abergelle goats. Out of 346 clinical cases recorded in the study period, 269 were from Saziba and 77 from Aybsa site. The clinical cases were diagnosed tentatively based on history, physical examination and some laboratory investigations. From all cases recorded mange mite (36.99%), abortion (15.32%), diarrhea (13.01%) and pneumonia (9.25%) were frequently occurring cases. There are highly significance association of clinical cases with age, sex, year and season (P= 0.00). Higher proportion of female goats (75.43%) were found disease positive as compared to males (24.57%) and age group > 1 year (86.41%) were significantly high compared to < 3months (0.58%) and between 3 month and 1year (13.01%). The lowest peaks of clinical diseases were observed during the months of September, October and January where as the highest number of clinical cases during the months of April and May. The highest and lowest clinical cases were observed in the year 2005 (50.87%) and 2002 (6.01%) respectively. About 86.42% of the treated patients were got rid of from illness. The result of this study revealed that female animals are prone to disease than male and disease distribution is highly affected by season, month and year. Therefore animal attendants and animal health workers should given special attention for female animals and special follow up during dry and short rainy seasons.

Key words: Abergelle goat · Clinical case · Diarrhea · Treatment · Vaccine

INTRODUCTION

Ethiopia has the largest livestock population in Africa, including more than 53.4 million cattle, 25.5 million sheep, 22.78 million goats, 2 million horses, 6.2 million donkeys, 0.38 million mules, 1.1 million camels and 49.3 million chickens [1].

Small ruminants are wide spread in the tropics and are important to subsistence, economic and social livelihoods of a large human population in these areas. Small ruminant are especially important to women, children and aged individuals, who are the most vulnerable member of the society in terms of under-nutrition and poverty. The agricultural potential in tropics, particularly in Ethiopia varies and consequently, wide array of small ruminant production systems with different production goals and priorities, management strategies and practice are found [2].

Despite, Ethiopia owned huge goat population; there are different constraints like poor nutrition, poor breeding practices, poor management, harsh climatic conditions and diseases that hinder the productivity of goats in most areas of Ethiopia.In Ethiopia, spread of disease is a major constraint for livestock production. The annual total economic losses due to diseases, mortality and reduced productive and reproductive performance were estimated to 150 million USD [3].

Emphasis of veterinary medicine had been on the treatment of individual animals which clearly identifiable diseases or defects. Currently, restricted attention is given to flock health and comprehensive preventive medicine which give poor consideration to both infectious and non infectious diseases and designed to increase production by preventing disease, rather than just dispensing traditional treatment to clinically sick animals [4].

Corresponding Author: Abebe Tesfaye, University of Gondar, Unit of Biomedical Sciences,
Po Box 196, Gondar, Ethiopia.

One advantage of screening disease occurrences in flock is the accumulation of valuable information on all diseases and allowing animal attendants and veterinarians to confidently determine priorities for the design of preventive measures which consequently leads to the avoidance of economic losses associated with diseases [5].

Prevalence and intensity of pathogenic infections are often seasonal and occur in many species and may be linked to changes in host or to seasonal changes in the prevalence of the pathogen or vector [5]. In this regard, knowledge of distribution of a disease in a population is important in suggesting the type of disease that is occurring and its possible causes. It also helps to relate the information to management or environmental changes [6] and is an important step in planning and implementing effective control measures.

Therefore this study was designed

- To identify major diseases and associated risk factors of Abergelle goats in Wag-Himra zone

Methodology

Study Area: This study was conducted at Aybra site (Sekota) and Saziba village (Abergelle) for the duration of four consecutive years (April 2002 to August 2005 E.C). Sekota is located about 720 kms North from Addis Ababa. Sokota has latitude and longitude of 12°38'N 39°02'E and an elevation range from 1340-2200 meters above sea level. Annual rainfall ranges between 350-700 mm, falling mainly from July to September. The pattern and distribution of the rainfall is erratic and uneven. Average temperature ranges from 16-27°C [1].

Study Animals and Their Management: Clinically sick Abergelle breed goats were the study subjects. Goats from both study areas were kept extensively and they were vaccinated against anthrax, goat pox and pesti des petites ruminants (PPR) once a year while ovine pasterollosis were given twice a year based on the epidemiologic pattern of those diseases. Animals were sprayed for mite, tick, lice and other ectoparasites with Diazinon 60% and given Albendazole bolus for internal parasites regularly for treatment and prophylaxis measures. Community animal health worker was employed for recording of the occurred goat disease in study villages. The farmers in the study area were informed on major goat diseases prevention and handling methods at the beginning of each investigation year.

Study Design: The study design used for this investigation was case control study design so as to be able to determine the frequency of major diseases occurrence in the village. Data were collected from clinical cases of 346 goats and data collected include: Age, sex, month and year of disease occurrence, tentative diagnosis, response to treatment and effectiveness of the given vaccine. The diagnosis was based on history, physical examination and some laboratory investigations like fecal examination, ectoparasite identification.

Data Management and Analysis: The collected data were checked manually for obvious inconsistencies, recording errors or missing data. The potential errors were evaluated and corrected. Basic data entry and handling was done by Microsoft Excel and statistical analysis was executed by SPSS Version 16 soft ware. Descriptive statistics such as proportion was used to summarize the analyzed data. The chi-square test with P-value was applied to test the existence of association and to see level of significance between observed health problems and associated risk factors respectively

RESULTS

Identified Diseases: Total of 22 diseases were identified during the study period and among the identified diseases mange mite (36.99%),

Table 1: Identified major diseases of Abergelle goats

Disease	Frequency	%
Abortion	53	15.32
Abscess	2	0.58
Actinomycosis	9	2.60
Anthrax	14	4.05
Black leg	2	0.58
Botulism	5	1.45
Coenurosis	13	3.76
Dystocia	1	0.29
Goat pox	6	1.73
Heart water	3	0.87
Hematoma	1	0.29
Lice infestation	2	0.58
Orf	6	1.73
PPR	12	3.47
Tick infestation	7	2.02
Vaginal prolapse	1	0.29
Diarrhea	45	13.01
Mange mite	128	36.99
Pneumonia	32	9.25
Septicemia	1	0.29
Sterility	1	0.29
Wound	4	1.16
Total	346	100
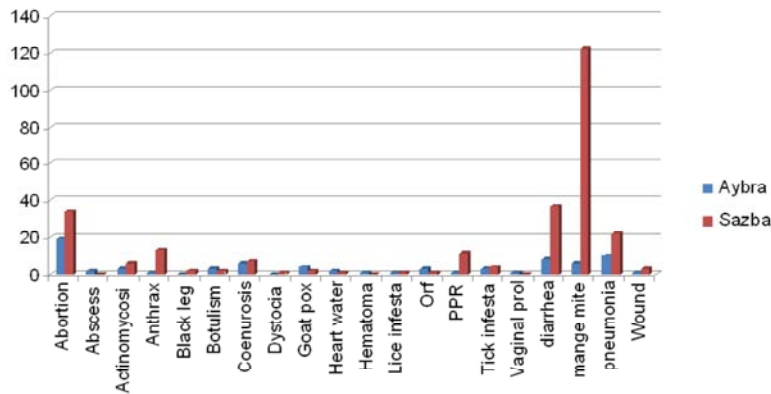
Fig. 1: Place wise distribution of diseases

Fig. 2: distribution of diseases in sex

Table 2: Percentage of clinical cases of different age groups
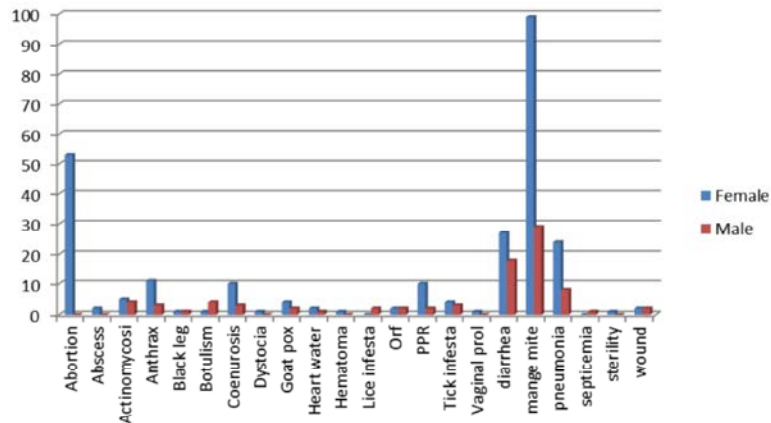
Age	Frequency	%	X^2
< 3 months	2	0.58	
3 months -1 year	45	13.01	50.86
>1 year	299	86.41	
Total	346	100	

There is statistically significant relationship between diseases and age groups (X^2= 50.86).

abortion (15.32%), diarrhea(13.01%) and pneumonia (9.25%) were the most common health problems in the area (Table 1).

Distribution of Diseases by Place: The higher occurrence of diseases was recorded in Saziba village (77.75%) than Aybra (22.25%). Place wise distribution of disease was indicated in Figure 1.

Distribution of Diseases in Sex: The study indicated that female animals (75.43%) were significantly affected in all diseases where as minimum in males (24.57%) (P= 0.00) (Figure 2).

Disease Distribution in Age: The highest percent of clinical cases were occurred in > 1 year age goats (86.41%) and least in <3 months of age (0.58%) (Table 2).

Occurrence of Diseases Across Months: Most of the cases recorded in April (22.25%) followed by July (14.45%) and May (13.01%) and the lowest peaks of clinical diseases were observed during the months of September, October and January (Table 3).

Patter of Disease Across Years: The highest percent of cases occurred in 2005 (50.87%) and lowest in 2002 (6.07%) (Table 5).

Response to Treatment: During the course of this investigation 346 goat patients were treated and the response was observed. Among the treated patients 86.42% of them were got rid of from illness while 13.58% of diseased goats were passed away (Table 6).

Table 3: distribution of diseases across months

Disease	Frequency across months											
	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug
Abortion	3	1	2	2	2	5	12	7	9	4	4	2
Abscess	0	0	0	0	0	0	1	0	0	1	0	0
Actinomycosis	1	1	1	1	0	0	0	2	1	1	0	1
Anthrax	0	0	0	1	0	1	1	10	0	0	0	1
Black leg	0	0	0	0	0	0	0	1	0	1	0	0
Botulism	0	0	1	0	0	1	2	1	0	0	0	0
Coenurosis	1	1	1	3	1	3	1	2	0	0	0	0
Dystocia	0	0	0	0	0	0	0	0	0	0	0	1
Goat pox	0	0	0	1	0	0	0	1	2	0	2	0
Heart water	0	1	0	0	0	0	0	0	0	2	0	0
Hematoma	0	0	0	0	0	0	0	0	0	1	0	0
Lice infestation	0	1	0	0	0	0	0	0	0	0	0	1
Orf	1	0	0	0	0	1	0	0	1	0	1	0
PPR	0	1	1	0	0	0	0	8	0	1	1	0
Tick infestation	0	0	0	1	3	0	0	0	1	1	1	0
Vaginal prolapse	0	0	0	0	0	0	1	0	0	0	0	0
Diarrhea	1	0	3	1	1	2	2	3	1	1	25	5
Mange mite	2	2	0	22	1	2	12	35	26	1	12	13
Pneumonia	1	3	4	1	2	0	2	2	4	7	4	2
Septicemia	0	0	0	0	0	0	0	1	0	0	0	0
Sterility	0	0	0	0	0	0	0	1	0	0	0	0
Wound	0	0	1	0	0	0	0	3	0	0	0	0
Total	10	11	14	33	10	15	34	77	45	21	50	26

Table 5: Occurrence of disease by year

Year	Frequency	%	X^2
2002	21	6.07	
2003	54	15.61	5.15
2004	96	27.75	
2005	176	50.87	
Total	346	100	

Table 6: Response of the patients for treatment

	Response of the disease to treatment			
	Cured		Dead	
Number of diseased goats	No	%	No	%
346	299	86.42	47	13.58

There is significant difference between death and recovery response to treatment $X^2 =9.284E2$, P= 0.00

DISCUSSION

This study identified twenty two goat diseases in the investigation areas: among these mange mite (36.99%), abortion (15.32%), diarrhea (13.01%) and pneumonia (9.25%) were the most common health problems and economically important diseases. This might be associated with endemic occurrence of various known or unknown infectious agents in the study area, poor management, housing, feeding and environmental factors.

The present result of mange mite (36.99%) was deviated from works of (7) reported 11.7% prevalence of mange mite in and Around Kombolcha (8) reported 16.67% prevalence of abortion in Daro-Labu district of West Hararghe this has agreement with this study result. From the total recorded 346 cases 269 were from Sazba and the remaining from Aybra site. The difference in the number of clinical cases between the two sites might be associated with the number of population difference in the two sites or due to environmental, feed and management factors.

In this study the occurrence of diseases was found to be more in females than males this might be due to females are stressed more than males like physiological stresses which cause suppression of immunity [4].

The highest proportion of disease occurred in between 1 year and 5 year age goats (86.41%) and least in <3 months of age (0.58%).

Most of the cases recorded in April (22.25%) followed by July and May 14.45% and 13.01% respectively and the lowest peaks of clinical diseases were observed during the months of September, October and January. The food scarcity, temperature stress might increase the occurrence in April and May.

The highest percent of cases occurred in 2013 (50.87%) and lowest in 2010 (6.07%). In 2013 mange mite were the highest, 75.78% (97/128) of all

mange mite cases recorded in four years, from all seasons and all cases except heart water and dystocia were occurred.

Among the treated patients 86.42% of them were got rid of from illness while 13.58% of diseased goats were passed away. There is significant difference between death and recovery response to treatment that implies treatment has extreme advantage even after the occurrence of the disease. From the occurred diseases the eight Anthrax (100%), PPR (91.67%), Orf (83.33%) Botulism (80%) Diarrhea (15.56), Pneumonia (9.38), Heart water (50%), Abortion (3.77%) were identified as the killer.

CONCLUSION AND RECOMMENDATIONS

This study was conducted to identify the major health problems of Abergelle goats and the clinical cases of mange mite (36.99%), abortion (15.32%), diarrhea(13.01%) and pneumonia (9.25%) were the most common health problems in the area. The occurrence of disease was found more in Saziba than Aybra and in females than males. It also observed distribution of disease were affected by temporal factors and the lowest peaks of clinical diseases were observed during the months of September, January and October where as the highest number of clinical cases during the months of April, July and May. The highest and lowest clinical cases were observed in the year 2005 and 2002 respectively. 86.42% of the treated patients were got rid of from illness and the mortality rate was 13.58%.Based on the above conclusion the following recommendations are forwarded

- There should be regular deworming and accaricide application by effective drugs
- Special attention should given to female animals and there should be special follow up in the months of April, May and July
- Further study on the identification of major diseases at laboratory level should be done

REFERENCES

1. Central Statistical Agency (CSA), 2011. Federal democratic republic of Ethiopia central statistical agency agricultural sample survey 2010/11 volume II report on livestock and livestock characteristics, Addis Ababa, Ethiopia, pp: 9-20.

2. Ramsay, 1999. Animal husbandry and securing the food supply consequences for the environment. Anim. Res. Dev., 49: 39-50.

3. Berhanu, A., 2002. Animal health and poverty reduction strategies. In: proceding of the 16th annual conference of the Ethiopian Veterinary Association held 5-6 June, 2002.Ghion Hotel, Addis Ababa, Ethiopia, pp: 117-137.

4. Sefinew, A. and Z. Bider, 2011. Occurrence and Associated Risk Factors of Clinical Diseases of Farm Animals Presented to Gondar University Clinic, Ethiopia, during the years 2007 to 2009.

5. Zegeye, B., A. Sefinew and T. Wudu, 2013. Temporal distribution of diseases of farm animals presented to Gondar University Veterinary Clinic, Ethiopia, during the years 2007 to 2009.

6. Radostitis, O.M., C.C. Gray, K.W. Hinchcliff and P.D. Constable, 2007. Veterinary Medicine, a Text book of the Diseases of Cattle, Horses, Sheep, Pigs and Goats. 10th edition London, Saunders Elsevier, pp: 119-196.

7. Tesfaheywet Zeryehun and Lema Mengesha, 2012. Prevalence of mange mite in and Around Kombolcha.

8. Dereje Tsegaye, Berhanu Belay and Aynalem Haile, 2013. Prevalence of Major Goat Diseases and Mortality of Goat in Daro-Labu District of West Hararghe, Eastern Ethiopia, Journal of Scientific and Innovative Research, 2(3): 665-672.