

RETRO RESPECTIVE STUDIES OF HYENA BITE IN ETHIOPIAN DONKEYS, EASTERN SHOA, CENTRAL ETHIOPIA

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ABSTRACT :- Donkeys are the most important animals in low level of development road transport network and rough terrain of the country make the donkey the most valuable; appropriate the affordable pack animal under small holder farming system of Ethiopia. One of the major constraints to working donkeys is hyena bite. The objective of this study was to know the prevalence of hyena bite related to anatomical location, body condition and fate of bitten donkeys. Retrospective analysis of Donkey Health and Welfare Project clinical database between 1994-2011 revealed a total of 919 cases of hyena bites. Hyena bite inflicted wound involved different body parts with the highest percentage on muscles of the hindquarter (55%). Other sites include testis, penis, vulva, udder, flank region, peri-anal, and limbs. The extent of the wound was grouped into survived (79.5%) and humanly euthanized (20.5%) on the basis of the amount of muscle lost and organ-system compromised. The problem seems to be more common in males (54.73%) and 6-10 years age group (46%). Donkeys with poor to average body condition score animals highly significantly influence the occurrence of hyena bite than good body condition: (1-1.5 BCS (60.5%) and >2 (16.33%) respectively. The season of attack was during rainy season (45%) than dry season.

Key words : Hyena bite, Retro respective, Hyena, Donkeys, Ethiopia.

1. INTRODUCTION

Ethiopia has the largest equine population, probably with the highest density per square kilometer in the world [1] and it has total of 6.9% of the world and 42.4% of Africa Equine population [2; 3]. There are 115.2 million domestic Equids (horse, donkey & mule) in the world of which 44.3 million are donkeys, 57.6 million horse 13.3 million mules [4]. Of these Ethiopia have about 7.9 million Equines, where 5.2 millions are donkeys [5]. According to the present regional classification of Ethiopia, 97% of the donkeys are found in the three regions 44% Oromia, 34% in Amhara and 19% in Tigray regional states [6].

In a country where there is less developed transport and communication services and road network insufficiently developed, the natural choice rests on the use of human labor and pack animal as a mode of transport, as it has been the case in some part of the world. This remains true

in the Ethiopian context. The mountainous nature of the land has made the travel time consuming and difficult [7]. The low level of development of the road transport network and the rough terrain of the country make the donkey the most valuable; appropriate the affordable pack animal under small holder farming system of Ethiopia [8].

Donkey is still one of the most important drought animals playing a key role in the agricultural economy [9]. Donkeys are considered better than other drought animals because of their inherent tolerance for dehydration, low sweating rate and good thermo-ability [10]. Recurrent and drought in Ethiopia resulting increase cattle mortality has also contributed to an increase in donkey usage as drought and pack animal both in rural and urban area. They account for over 50% of the animal energy scenario in the country [3].

Donkeys in Ethiopia at least in the donkey health and welfare project (DHWP) operation sites are subjected to a variety of health disorder including multi-parasitism, back sore and other wounds, hoof problems, colic, various infectious disease such as strangle, tetanus etc [11]. Wounds have been considered as a second most important health problem next to polyparasitism. In Ethiopia donkeys are frequently of harness materials. One of the problems which are a potential threat to the lives of working donkeys in central Ethiopia is hyena bite [12]. Therefore the objective of this study was to know the prevalence of hyena bite related to anatomical location, body condition and fate of bitten donkeys.

2 Method and Material

2.1. Study area

The study was conducted in ADA'A districts of central Ethiopia. These sites were previously selected as working area by the stationary and mobile clinic of the donkey sanctuary project based on their high Equine population and high prevalence hyena bite was reported & poor economic status of the owner.

Ada'a: found in Oromia regional state in Eastern shoa zone 45km south east of Addis Ababa, located 90N latitude & 40E longitude of 1880 meter above sea level in the central highlands of Ethiopia. It has annual rainfall of 1151.6 mm of which 84% is in the long rain season (June to September). The dry season extends from October to February. The mean annual maximum and minimum temperature are 30.70c and 8.50c, respectively and the mean relative humidity is 61.3% [13]. In addition to its proximity to the capital city, Addis Ababa, Debre zeit is one of the

most scenic location in the country with creator lakes, which make it a beautiful town. Farmers in vicinity of Debre zeit town follow a mix crop livestock farming system and cereal legume cropping system. The heavy black clay (koticha) and light soil type (gomberie) of Debre- Zeit represent the major soil type in which teff, wheat and highland pulses are grown. Moreover Debre Zeit one it's surrounding (with in 50 km radius) have variable and yet representative of agro-ecology of the country. These various agro- climatic zones are inhabited with different plant and animal species [14]. The donkey population is 46.222 [15].

2.2 Study Animal

The study animals are donkeys brought to the Donkey Health and welfare Project stationary and other working sites since 1994 - 2011 for the treatment of hyena bite inflicted wounds. These donkeys are of different age group, sex, body condition and different management systems.

2.3. Study design

Conventional veterinary investigation methods were applied to generate information on hyena bite. Conventional investigation of hyena bite was conducted using retrospective data.

2.3.1 Retrospective study: - History records of the patient animals about the sufferings with any disease in past was recorded to study the risk factors and correlate with the present illness to diagnose the disease. Data on date of initial registration, sex, age, management problems, time of bite and body condition of bitted donkeys were collected from Donkey health and welfare project (DHWP) operations site and clinic case record register during the period starts from 1994 to 2011 years data to determine prevalent area, anatomical site, time of bite, sex, season, management problems of hyena bite.

2.3.2 Clinical work: - Clinical observation of wounded animal related to hyena bite was done during clinical work experience, the perception of the owners with other participatory appraisal results. I faced 32 wounded donkeys with different site of bite and different degree of wound in stationary and mobile DHWP clinic. I observed wounded clinically like hanged huge tissue, hemorrhagic, different degree of lameness etc. Then keep the donkeys depends on the degree tissue loss and follow up daily with wound management. Healing may varied depended on site of bite, degree of wound, owner instruction acceptance and response.

2.3.4 DATA COLLECTION AND ANALYSIS

Retrospective investigation results were analyzed using statistical package for social science (SPSS version 15)

RESULTS

In this study shows most common anatomical site that bitten by hyena was around thigh and perianal muscles. Also unlikely site was limbs.

Table 1 The prevalence of hyena bite inflicted wounds related to anatomical location.

Anatomical site affected	frequency	Percentage (%)	CI at 95%
Thigh & perianal muscles	502	55	51.8-58.2
Flank region & abdominal muscles	233	25	22.2-27.8
Vulva and udder region	42	5	3,6-6.4
Testicles and penis	130	14	11.8-16.2
Limbs	13	1	0.4 -1.6
Total	919	100	

From total 919,556 (61%) of donkey was poor body condition that bitten by hyena. Whereas, donkey that had good body condition relatively less hyena bite.

Table 2 Distribution of cases of hyena bite related to body condition of the attacked donkey

Body Condition group	frequency	percentage (%)	CI at 95%
Poor	556	61	57.8-64.2
Moderate	213	23	20.3-25.7
Good	150	16	13.6-18.4
Total	919	100	

In this study shows, hyena bite varies between sex of donkey. Common hyena bite occur the male donkeys.

Table 3 distribution of cases of hyena bite.

Sex	frequency	percentage (%)	CI at 95%
Male	503	54.73	51.53-57.93
Female	416	45.27	42.07-48.47

Total	919	100
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In this study also shows the hyena bite between age of donkey was varies from the highest to lowest: 6-10yrs (46%), 0-5yrs (29%), 11-15yrs (21%) and above 16yrs (4%),respectively

Table 4 Cases of hyena bite related to age.

Age	frequency	percentage (%)	CI at 95%
0-5	263	29	26.1 –31.9
6-10	419	46	42.8-49.2
11-15	193	21	17.5-24.5
16 and above	44	4	2.7-4.3
Total	919	100	

Table 5 Number of donkeys humanely put to sleep due to severe hyena bite.

Number of donkey	frequency	percentage (%)	CI at 95%
Survived	731	79.5	76.9-82.1
Euthanized	188	20.5	17.9-23.1
Total	919	100	

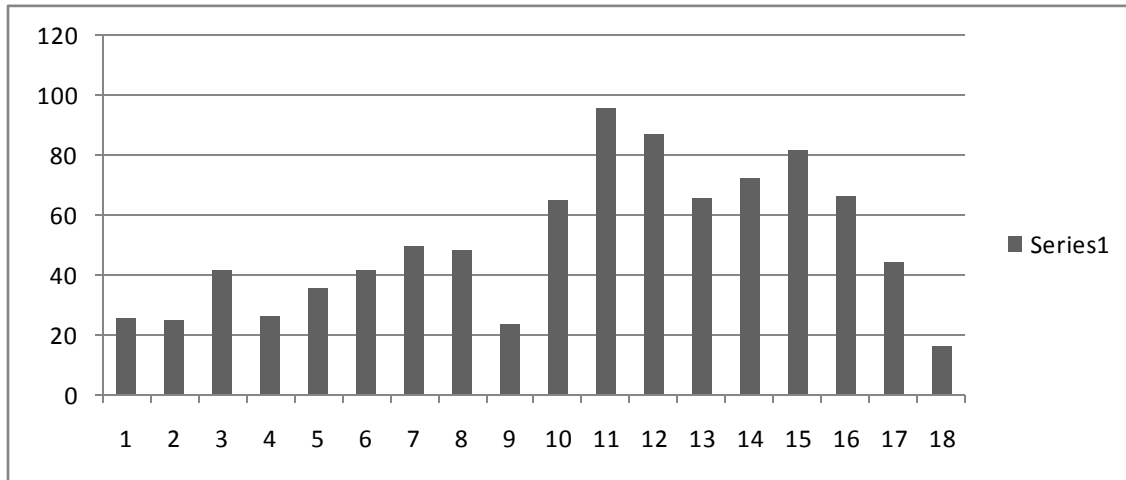


Figure 1 shows that case of hyena bite yearly

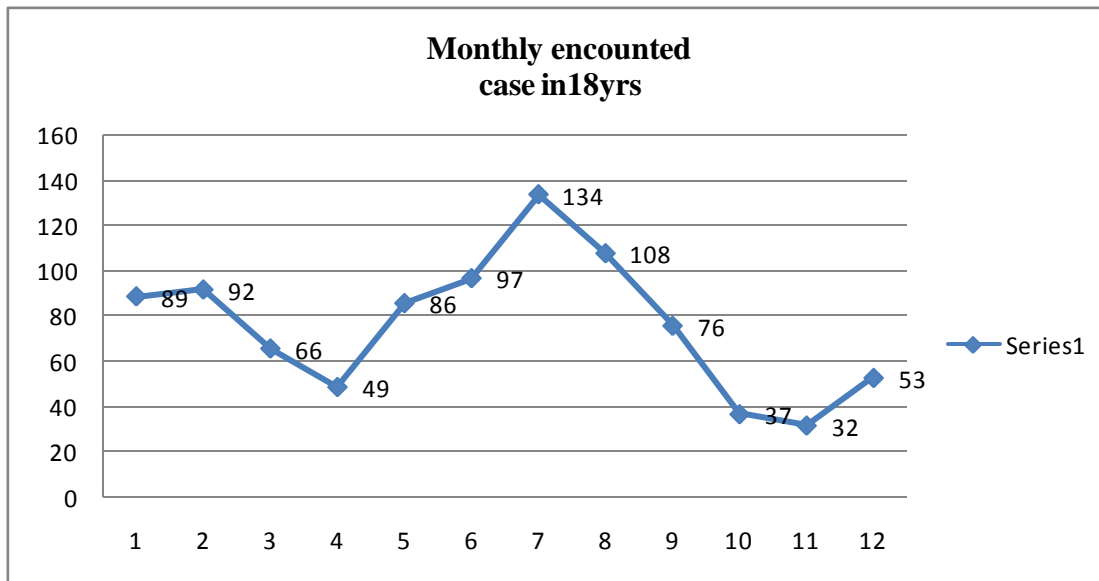


Figure 2: This shows that months of the year

DISCUSSION

The study showed that hyena bite in working donkeys are very common and sever. Hyenas seem to consume domestic prey species in the study area indicating the virtual absence of wild prey species. Spotted hyena preyed mainly on domestic animals as was expected considering the whole extirpation of medium-sized natural prey in the area. In Ada'a, wild prey species have been greatly reduced in the past decades mainly due to intensive agriculture, habitat loss, human settlements and other factors associated with human population growth.

Human-wildlife conflicts arise mainly because of the loss, degradation and fragmentation of habitats through anthropogenic activities. As habitat gets fragmented, the length of 'edge' for the interface between humans and wildlife increases, while the animal populations become compressed in insular refuges. Consequently, it leads to greater contact and conflict with humans as wild animals seek to fulfill their nutritional, ecological and behavioral needs [16].

DWHP reported of 919 hyena bitten donkeys indicate that loss of life, loss of body parts (udder, testicles, and penis), herniation, and impairment of reproduction and lameness of various degrees 20.5% of them were humanely euthanized. However, the other survived donkeys hyena bite to be extremely painful, stressful and undoubtedly the most critical welfare issue facing donkeys with various degree wound encountered at different anatomical site (table1). The common anatomical site of bite was thigh and perianal muscles area this might be due to quantity and quality of muscle. whereas, limbs was unlikely to bite by hyena might be due to low quality of muscle and during kicking the limbs was upward to kick hyena no time to bite.

Most the hyena bitten donkeys were males (54.73%) may due to most working donkeys were male in that study area due to male had relatively constant physiology prefer by farmers. Also remember that keeping track of animals Body Condition Score (BCS) was even more important when the donkeys giving good feeds and it's accurately evaluate an individual BCS is by feeling. A healthy equid should have a BCS of 2.5 to 3.0. An individual that is thinner body Condition than this will lack insulation provided by body mass and will require additional calories to tolerate the cold weather and to protect from predator. Also, any additional inclement weather, such as wind and rain will reduce the ability of the hair coat to insulate, and further will increase energy need. The body condition of the donkeys considered as risk factor hyena bitten donkeys 60.5% were poor body condition in study area.

Conclusion and recommendations

In a country where there is less developed transport and communication services and road network insufficiently developed, the natural choice rests on the use of human labor and pack animal as a mode of transport. The low level of development of the road transport network and the rough terrain of the country make the donkey the most valuable; appropriate the affordable pack animal under small holder farming system of Ethiopia. Donkey is drought animals playing

a key role in the agricultural economy. They account for over 50% of the animal energy scenario in the country. Donkeys

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