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Abha Mariam

Division of Veterinary Pathology,
Faculty of Veterinary Sciences and
Animal Husbandry, SKUAST
Kashmir, India

Masood S Mir

Division of Veterinary Pathology,
Faculty of Veterinary Sciences and
Animal Husbandry, SKUAST
Kashmir, India

Shafqat Khan

Division of Veterinary Microbiology
and Immunology, Faculty of
Veterinary Sciences and Animal
Husbandry, SKUAST Kashmir, India

OK Baba

Division of Veterinary Microbiology,
College of Veterinary and Animal
Sciences, GBPUAT, Uttarakhand,
India

ZA Kashoo

Division of Veterinary Microbiology
and Immunology, Faculty of
Veterinary Sciences and Animal
Husbandry, SKUAST Kashmir, India

HM Khan

Mountain Research Centre for Sheep
and Goat, SKUAST-K, Shuhama,
Alusteng-190006 Srinagar, Kashmir
(J&K) India

AH Sofi

Division of LPT, F.V.Sc. & A.H.,
SKUAST-K, Shuhama, Alusteng-
190006 Srinagar, Kashmir (J&K)
India

FD Sheikh

High Altitude Arid Mountain
Research Station, SKUAST-K, Leh,
Ladakh (J&K) India

SA Wani

Division of LPT, F.V.Sc. & A.H.,
SKUAST-K, Shuhama, Alusteng-
190006 Srinagar, Kashmir (J&K)
India

Correspondence**Abha Mariam**

Division of Veterinary
Pathology, Faculty of
Veterinary Sciences and Animal
Husbandry, SKUAST Kashmir,
India

Health problems of changra goats in changthang and adjoining trans-Himalayan area of Ladakh

Abha Mariam, Masood S Mir, Shafqat Khan, OK Baba, ZA Kashoo, HM Khan, AH Sofi, FD Sheikh and SA Wani

Abstract

Studies on the mortality pattern in Changra goats in different traditional and non-traditional rearing areas of Changthang, Ladakh (J&K) was investigated. Active animal health survey performed over a period of six years from 2008 to 2013. Out of a total of 3344 deaths recorded, maximum mortality was due to to hypothermia (27.2%) followed by starvation (24.52%), contagious ecthyma (24.43%), diarrhoea (14.74%), contagious caprine pleuropneumonia (CCPP) (5.56%), and wild attacks (3.50%). Contagious ecthyma was the major cause of death during 2008 to 2010; starvation during 2011 and 2012 and hypothermia during 2013. Mortalities due to wild attacks were noted in Tangyar, Digger, Ankung, Gya and Miru. Hypothermia was a major cause of mortality among kids. The study revealed animal health as one of the most important constraints in rearing of Changra goats warranting extensive investigations and tailored technological interventions.

Keywords: changra goats, ladakh, health, hypothermia, starvation, diarrhoea contagious ecthyma

1. Introduction

Changra is a well-recognized goat breed native to the Changthang region in the Indian Trans-Himalayan area of Ladakh which represents the western extension of the Tibetan Plateau, an important highland grazing ecosystem^[1]. The area is located 3000 m to 6000 m above sea level and has harsh climatic conditions with very low rainfall and temperature ranging between -40 to +40 °C^[2]. The breed is well adapted to the local cold arid agro-climatic conditions of the region and is reared mainly by a nomadic tribe known as 'Changpa'^[3]. Vegetation in this area is sparse and the Changpas move continuously from dawn to dusk with their flocks in the grazing areas. Changra goats are an important source of economic and food security in their natural belt. Almost 90% of the population of the Changthang area survives on the income from goats and sheep, which is nearly \$8.4 million annually^[4]. Besides producing pashmina, the returns are in the form of animal sales, chevon, milk, pelt, and manure. These goats are also used as pack animals.

As is true for other livestock in any agro-climatic zone, animal health is one of the prime concerns for the goat reared in Changthang. Wani *et al.*^[2] reported animal health as one of the most important constraints in rearing of Changra goats, second only to breeding and feeding. While, heavy kid mortality and frequent disease outbreaks taking heavy tolls of the livestock have been reported, limited attempts have been made for undertaking systemic survey of diseases prevalent among Changra goats. The scant literature available vis-à-vis diseases in Changra goats reveal occurrence of helminthiasis, coccidiosis, ectoparasite infestation, paratuberculosis, brucellosis and Contagious caprine pleuropneumonia^[5-10]. Present study was aimed to investigate the causes of mortality among the Changra goats in its traditional belt and non-traditional areas in and around the Changthang belt of Ladakh.

2. Materials and Methods

Present study was carried out through an active animal health survey performed during the year 2008-2013. The study was conducted in from 11 areas viz. Tangyar, Digger, Kyoul, Anlay, Angkung, Korzok, Maan, Kharnak, Gya, Miru, and Chushule areas in traditional and non-traditional Changra rearing belt (Fig. 1). Information regarding Changragoats vis-à-vis health status was collected through on-farm visits in a purposively designed recording form. Information was collected from farmers regarding number of animals, occurrence of diseases

disease conditions, age groups affected, mortality, etc. besides, goats were examined physically for presence of

disease or disease conditions.

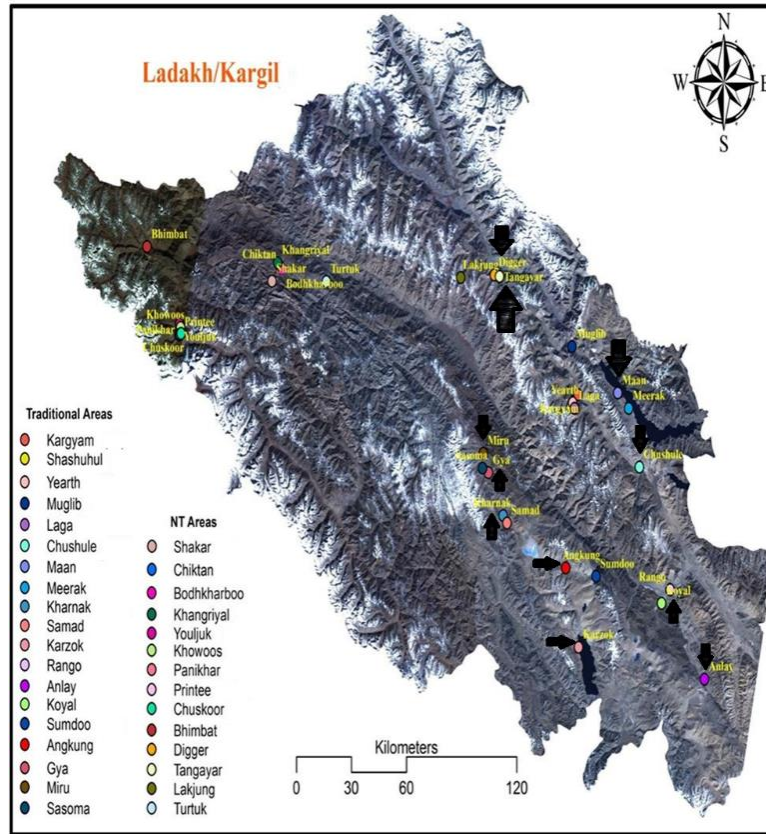


Fig 1: Sampling/surveillance areas of traditional and non-traditional Changra goat rearing regions in Ladakh

Mortality Pattern: Year-wise and area-wise mortality pattern was calculated as percent deaths due to a condition out of the total number of deaths occurring during the year in all the

areas and total number of deaths occurring in an area during 2008 to 2013.

$$\% \text{ Mortality (year-wise)} = \frac{\text{Total death due to given condition during a year}}{\text{Total deaths during a year}} \times 100$$

$$\% \text{ Mortality (Area-wise)} = \frac{\text{Total death due to given condition in an areas}}{\text{Total deaths in an areas}} \times 100$$

$$\% \text{ Mortality (Overall)} = \frac{\text{Total death due to given condition}}{\text{Total deaths}} \times 100$$

$$\% \text{ Mortality (Year-wise Overall)} = \frac{\text{Total deaths in a year}}{\text{Total deaths}} \times 100$$

$$\% \text{ Mortality (Area-wise Overall)} = \frac{\text{Total deaths in an areas}}{\text{Total deaths}} \times 100$$

3. Results

Animal health problems in changthang

As per the information retrieved from farmers in various area of Changthang, the major health concerns reported were heavy kid mortality, Contagious Caprine Pleuropneumonia (CCPP), Contagious ecthyma, Pestes de Petites Ruminentis (PPR), diarrhoea, and ectoparasite infestation (lice infestation, tick infestation). Other affections observed included, pneumonia, mouth and gum lesions in Chushul area, eye affection, and foot rot.

Mortality pattern

A total of 3344 death were recorded in Changra goats over a period of six years from 2008 to 2013 in traditional and non-traditional areas of Ladakh. In general, maximum mortality (27.2%) were ascribed to hypothermia followed by starvation (24.52%), contagious ecthyma (24.43%), diarrhea (14.74%), contagious caprine pleuropneumonia (CCPP) (5.56%), and wild attacks (3.50%) (Table 1). Year-wise evaluation of data revealed that the overall mortalities pattern varied during different years. Contagious ecthyma was the major cause of

death during the years 2008 to 2010; and starvation during the years 2011 and 2012. During the year 2013 maximum number of deaths, 1094, was recorded, majority of which were due to hypothermia (52.38%). Almost similar trends were observed during different years.

Area wise mortality pattern revealed maximum deaths in Anlay (34.48%), followed by Angkung (18.54%), Chushul (8.79%), Kyoul (8.28%), Gya (7.60%), Kharnak (5.59%), Korzok (4.84%), Miru (4.28%), Maan (4.01%), Tangyar (1.85%), and Digger (1.73%) in that order (Table 2). In

general hypothermia appeared to be the major cause of mortality in Chushul, Ankung and Anlay; starvation in Mann, Tangyar and Miru, and contagious ecthyma in Kyoul and Korzok. Over the six years period no mortalities due to hypothermia were noted in tangyar, Digger and Gya; diarrhoea in Korzok and Maan; contagious ecthyma in Digger; and CCPP in Kyoul, Anlay, Ankung, Maan and Chushul. Mortalities due to wild attacks were noted only in Tangyar, Digger, Ankung, Gya and Miru.

Table 1: Year-wise mortality pattern of Changra goats recorded in Changthang region of Ladakh from 2008 to 2013

Year	Total Deaths	Cause of death					
		Hypo-thermia	Starvation	Diarrhoea	Contagious Ecthyma	CCPP	Wild attack
2008	466 (13.93)	79 (16.95)	125 (26.82)	82 (17.60)	127 (27.25)	37 (7.94)	16 (3.43)
2009	432 (12.91)	71 (16.44)	61 (14.12)	83 (19.21)	165 (38.19)	31 (7.18)	21 (4.86)
2010	421 (12.58)	79 (18.76)	94 (22.33)	47 (11.16)	139 (33.02)	42 (9.98)	20 (4.75)
2011	502 (15.01)	43 (8.57)	177 (35.26)	82 (16.33)	135 (26.89)	36 (7.17)	29 (5.78)
2012	429 (12.82)	66 (15.38)	141 (32.87)	50 (11.66)	139 (32.40)	14 (3.26)	19 (4.43)
2013	1094 (32.71)	573 (52.38)	222 (20.29)	149 (13.62)	112 (10.24)	26 (2.38)	12 (1.10)
Grand Total	3344	911 (27.24)	820 (24.52)	493 (14.74)	817 (24.43)	186 (5.56)	117 (3.50)

*Data in braces are per cent values * Data in braces are per cent values calculated from total deaths in all the areas

Table 2: Area wise mortality pattern of Changra goats recorded in different areas of Changthang region of Ladakh from 2008 to 2013

Year	Total Deaths*	Cause of death					
		Hypothermia	Starvation	Diarrhoea	Contagious Ecthyma	CCPP	Wild attack
Tangyar	62 (1.85)	0 (0.00)	23 (37.10)	15 (24.19)	2 (3.23)	4 (6.45)	18 (29.03)
Digger	58 (1.73)	0 (0.00)	18 (31.03)	15 (25.86)	0 (0.00)	1 (1.72)	24 (41.38)
Kyoul	277 (8.28)	56 (20.22)	80 (28.88)	29 (10.47)	112 (40.43)	0 (0.00)	0 (0.00)
Anlay	1153 (34.48)	336 (29.14)	275 (23.85)	231 (20.03)	311 (26.97)	0 (0.00)	0 (0.00)
Angkung	620 (18.54)	200 (32.26)	177 (28.55)	62 (10.00)	168 (27.10)	0 (0.00)	13 (2.10)
Korzok	162 (4.84)	42 (25.93)	24 (14.81)	0 (0.00)	56 (34.57)	40 (24.69)	0 (0.00)
Maan	134 (4.01)	24 (17.91)	92 (68.66)	0 (0.00)	18 (13.43)	0 (0.00)	0 (0.00)
Kharnak	187 (5.59)	26 (13.90)	34 (18.18)	13 (6.95)	40 (21.39)	74 (39.57)	0 (0.00)
Gya	254 (7.60)	0 (0.00)	47 (18.50)	94 (37.01)	16 (6.30)	57 (22.44)	40 (15.75)
Miru	143 (4.28)	15 (10.49)	40 (27.97)	22 (15.38)	34 (23.78)	10 (6.99)	22 (15.38)
Chushul	294 (8.79)	212 (72.11)	10 (3.40)	12 (4.08)	60 (20.41)	0 (0.00)	0 (0.00)
Total	3344	911 (27.24)	820 (24.52)	493 (14.74)	817 (24.43)	186 (5.56)	117 (3.50)

Data in braces are per cent values; * Data in braces are per cent values calculated from total deaths in all the areas

4. Discussion

The diseases / disease conditions observed in Changra goats included heavy kid mortality, Contagious Caprine Pleuropneumonia (CCPP), Contagious Ecthyma, Peste des Petites Ruminants (PPR), diarrhoea, pneumonia, foot rot, Mouth and gum lesions at Chushul, eye affections, and ectoparasite infestation (lice infestation, tick infestation). Mouth and gum lesions observed in Chushul could be ascribed to the high salt concentration in water and pasture soil, while eye affections could be associated with mechanical damage by spiny weeds. Foot rot may be associated with the dampness in the open paddocks because of infrequent cleaning buttressed with mechanical damages. However, the infectious diseases observed targeted and extensive etiopathological investigations.

Health concerns have been reported as one of the most important constraints which lead to severe economic losses. This has been attributed to harsh climatic conditions prevailing in the area^[2]. Hypothermia has been recognized as the most important cause of deaths among lambs as kids due to poorly developed thermoregulatory system during early postnatal life^[11, 12]. In Changthang, kidding occurs during February to April, when the ambient temperature is very low and also there is greater fluctuation in day vs night

temperatures, leading to heavy stress and high mortality^[11]. Besides lack of adequate nutrition, poor and inadequate surface grazing for dams, lack of proper health cover and improper housing facilities may further assentuate the condition. Bactawar^[13] recorded hypothermia and starvation as two principal causes of lamb mortality which account for 5-20% losses. Somvanshi *et al.*^[12] incriminated starvation as one of the major factors for mortality among Changra goats. However, studies on kid mortalities at different places have revealed infectious factors like pneumonia, diarrhoea, ecthyma and enterotoxemia as the major causes^[14, 15]. Diarrhea recorded in the present study may be associated with coccidiosis as observed in the present study. CCPP has been recognized as a major threat to the goat population and is international in distribution particularly in countries having extensive goat farming including African countries, the Middle East, Europe, Pakistan and India^[16-22]. It is enlisted by the Office of International Epizootic as a list B disease^[23] (OIE, 2008). Ingle *et al.*^[18] reported an overall prevalence of 34% for CCPP in India. The baseline data with regards to CCPP in Changthang area is lacking. Extensive etiopathological studies vis-à-vis epidemiological factors are warranted for demographic profiling of health conditions in Changthang.

5. Conclusion

Animal health concerns including kid mortality due to management under inclement weather conditions and infectious diseases especially constitutes one of the most important constraints in rearing of Changra goats warranting extensive investigations and tailored technological interventions.

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7. Conflict of interest: The authors declare that they have no conflict of interest

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