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Gaurav Kumar Jain
Teaching Associate, Veterinary
University Training and
Research Centre (Rajasthan
University of Veterinary and
Animal Sciences, Bikaner)
Bakalia, Nagaur, Rajasthan,
India

AP Singh
Professor and Head, Department
of Veterinary Clinical Medicine
Ethics and Jurisprudence,
College of Veterinary and Animal
Science, Rajasthan University of
Veterinary and Animal Sciences,
Bikaner, Rajasthan, India

Jitendra Tanwer
M.V.Sc. in Veterinary Clinical
Medicine Ethics and
Jurisprudence from College of
Veterinary and Animal Science,
Rajasthan University of
Veterinary and Animal Sciences,
Bikaner, Rajasthan, India

Sumnil Marwaha
Ph. D Scholar, Veterinary
Medicine, College of Veterinary
Sciences, LUVAS, Hisar,
Haryana, India

Anju Chahar
Professor and Head, Department
of Epidemiology and Preventive
Veterinary Medicine, College of
Veterinary and Animal Science,
Rajasthan University of
Veterinary and Animal Sciences,
Bikaner, Rajasthan, India

Correspondence

Gaurav Kumar Jain
Teaching Associate, Veterinary
University Training and
Research Centre (Rajasthan
University of Veterinary and
Animal Sciences, Bikaner)
Bakalia, Nagaur, Rajasthan,
India

Epidemiological studies on sarcoptic mange in camels (*Camelus dromedarius*) in Bikaner district (West Rajasthan)

**Gaurav Kumar Jain, AP Singh, Jitendra Tanwer, Sumnil Marwaha and
Anju Chahar**

Abstract

An effort had been made to draw a picture of epidemiological data of sarcoptic mange in camels in relation to age, sex, nutritional status and body condition. The incidence of sarcoptic mange in population was 31%. Camels aged above 8 years were highly affected. Male were more affected than female. Poor body condition and poor nutritional status also made camels more prone to having sarcoptic mange.

Keywords: Sarcoptic mange, *Camelus dromedaries*, prevalence, Rajasthan

Introduction

The mite *Sarcoptes scabiei* var. *cameli* is the cause of sarcoptic mange which is regarded as one of the most prevalent and serious camel disease (Lodha, 1966 and Higgins, 1983) [8, 4]. The ectoparasites directly or indirectly cause a great diversity of health problems. It is often ranked second to trypanosomiasis in importance to all the disorders in dromedary camels (Pegram and Higgins, 1992) [11]. There are several skin diseases which may mimic sarcoptic mange. These are ringworm, contagious skin necrosis (*Dermatophilus congolensis*), infestation with other ectoparasites causing skin problems including chorioptic mange (*Chorioptes* spp.), demodectic mange (*Demodex* spp.) and psoroptic mange (*Psoroptes* spp.) But mange or sarcopticosis is highly contagious and debilitating skin disease of camels, which can spread to herdsmen, or others associated with infected animals. The mite may be transmitted directly by contact or indirectly through objects, such as saddles, harnesses, utensils, bedding and even tree trunks. Lodha (1966) [8] reported that sarcoptic mange is a highly contagious skin disease of camels and occur throughout the state of Rajasthan. The infected camel spends most of their time in biting and scratching the affected parts, stops feeding and is thrown out of work. Thus, this disease is of great economic importance.

Material and Method

This study was conducted in the villages adjacent to Bikaner, Rajasthan. Total 100 camels were examined for infection of sarcoptic mange. Study work was carried out for various factors involved in the incidence of sarcoptic mange like effect of age, sex, nutritional status and body condition. On the basis of age camels were grouped in different age group viz. 0-1 year, 1- 4 years, 4- 8years and above 8 years. On the basis of nutritional conditions and external appearance of body of camels, they were classified as good, moderate and poor.

Collection of skin scrappings for sarcoptic mange

From affected camels with clear skin lesions, skin scrapings were collected with a blunt scalpel, particularly from the advancing border of skin lesions. Most recent lesions were chosen for scrapings. These samples were collected in sterile vials

Direct microscopic examination for sarcoptic mange

Skin scrapings collected from different sites were suspended in a 10% solution of potassium hydroxide and kept in water bath at 37⁰ C for few hours and then centrifuged at 3000 rpm for 3 minutes. The supernatant was discarded and one drop of glycerine was added to the sediment before it was microscopically examined for *Sarcoptes Scabiei* or their remnants (Sloss and Kemp, 1978) [13].

Results and Discussion

Out of 100, total 31 camels were found positive for sarcoptic mange indicating an overall incidence of 31 percent. Prevalence rate ranging from 16.67 to 80% were reported in camels (Chauhan, 1986; Nayel and Abu-Samara, 1986; Basu *et al.*, 1996; Awol *et al.*, 2014) [3, 9, 2, 1].

Mange was observed in all age group of camels during the period of study (Table 1). Among 31 mange positive camels, maximum incidence was observed in 8 years above age group followed by 0-1 age group and least in 4-8 year age group. Similar findings have been reported by Rathor and Lodha (1973) [12]. 8 years above age group having high incidence because at this age camels are generally put to physical work (Nayel and Abu-Samara, 1986) [9]. Young and aged camels are more prone to infection, probably reflecting lowered body defences (Kumar *et al.*, 1992) [7].

Table 1: Age wise incidence of sarcoptic mange in camels

Age	No. of camels in population	No. of affected camels	Percent affected
0-1	5	2	40%
1-4	23	6	26.08%
4-8	42	9	21.42%
Above 8 Years	30	14	46.66%

In the present study, incidence of sarcoptic mange found more in male compared to female camels (Table 2) that might be due male camels does more physical work compared to female camels, that's why male have higher exposure to stress. Higher prevalence of sarcoptic mange in male animals was also observed by Lodha (1966) [8] and Parmar (2005) [10]. *Sarcoptic scabiei* may affect camels regardless of sex (Nayel and Abu-Samara, 1986) [9].

Table 2: Sex wise incidence of sarcoptic mange in camels

Sex of the camel	Total no. of camel in population	No. of affected camels	Incidence
Male	63	22	34.92%
Female	37	9	24.32%

The camels which were fed on good nutritional provision and having good body condition were less prone (22.72%) to sarcoptic mange (Table 3), probably reflecting their higher body defences. Sarcoptic mange may occurred in animals which were well fed and in good body condition (Nayel and Abu-Samara, 1986) [9]. Animal had been more prevalence of sarcoptic mange with Moderate and poor body condition 30.76%, and 34.61%, respectively. Animals in poor body condition are more prone to infection (Lodha, 1966; Higgins, 1983; and 1984; Parmar, 2005) [8, 4, 5, 10]. Low plane of nutrition plays an important predisposing role for sarcoptic mange (Kumar *et al.* 1992, Parmar, 2005) [7, 10].

Table 3: Incidence of sarcoptic mange in on the basis of nutritional status and body condition

Condition	Total no. of camels in population	No. of affected camels	Incidence
Good	22	5	22.72
Moderate	26	8	30.76
poor	52	18	34.61

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