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Sarcoptic mange in a camel (*Camelus dromedarius*): A Case report emphasizing zoonotic concerns and preventive measures

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Abstract

Sarcoptic mange infection in camels is the second most economically significant disease with zoonotic potential. A four-year-old female camel maintained in a circus was presented with chronic intense pruritus, itching and thickened, erythematous skin lesions over various parts of the body for the past three months. Parasitological examination of the skin scraping revealed the presence of *Sarcoptes scabiei* var. *cameli* based on morphological characteristics. Considering the clinical signs and parasitological confirmation, sarcoptic mange in the camel was diagnosed and treated with injectable ivermectin and topical application of benzyl benzoate and chlorhexidine for two weeks, resulting in complete recovery. Additionally, the zoonotic risk of sarcoptic mange transmission to the animal owner was addressed. This case report emphasizes the importance of early diagnosis and effective preventive measures to mitigate zoonotic transmission and improve camel health.

Keywords: Sarcoptic mange, camel, parasites, skin scrapings, zoonotic risk, preventive measures

1. Introduction

The one-humped camel (*Camelus dromedarius*) is a crucial livestock species maintained in both desert and non-desert ecosystems due to its unique adaptability to harsh environments, as well as its physiological and anatomical traits (Hoter *et al.* 2019) ^[1]. Camels play a significant role in improving farmers' livelihoods in various regions worldwide. Additionally, camels are commonly used in circus exhibitions, where they are exposed to frequent movement and environmental stressors (Iossa *et al.* 2009) ^[2]. Given their importance, the health conditions affecting camels need to be well-documented.

Among various illnesses affecting camels, sarcoptic mange is a highly significant skin infection, second only to trypanosomiasis in economic impact (Chhabra & Gahlot 2010, Al-Hasnawy *et al.* 2022) ^[3, 4]. Sarcoptic mange is caused by *Sarcoptes scabiei* var. *cameli*, a burrowing mite that leads to chronic dermatological conditions and a debilitating disease course (Al-Hasnawy *et al.* 2022) ^[4]. Severe cases often result in secondary bacterial infections, further complicating recovery. The economic impact of this disease ranks it as the second most important disease in camels (Chhabra & Gahlot 2010) ^[3].

The transmission of *Sarcoptes* sp. mites occurs through direct contact with infected animals or indirectly via fomites (Wilson 2008) ^[5]. Although zoonotic transmission from infected animals to humans has been reported (Kinne & Wernery 2003, Chhabra & Gahlot 2010) ^[6, 3], such incidents in camels remain rare (Hebel *et al.* 2025) ^[7]. The zoonotic potential of sarcoptic mange in camels necessitates strict monitoring and documentation of clinical cases to tailor preventive strategies according to geographical and farming practices (Bandi & Saikumar 2012) ^[8]. This case report documents sarcoptic mange infection in a one-humped camel, detailing therapeutic interventions and the zoonotic risk to animal handlers, thereby raising awareness among those working closely with camels.

2. Case presentation

A four-year-old female one-humped circus camel was presented to the Veterinary Clinical Complex, Veterinary College and Research Institute, Udumalpet, Tiruppur, Tamil Nadu, India, with complaints of continuous itching, focal alopecia and thickened skin over the right thigh, neck and ventral abdomen with erythematous lesions for the past three months (Figure 1A & B). General clinical examination revealed an emaciated appearance, though other clinical parameters were normal.

Skin scrapings from the lesion site were collected in 10% potassium hydroxide, heated to release mites from scabs and centrifuged. The sediment was examined under a light microscope to identify endoparasites (Charles & Robinson 2006) [9]. Additionally, the camel's handler reported intense pruritus, skin rashes and irritation for the past fifteen days, with lesions predominantly on the anterolateral thigh and finger webbing. The owner was advised to consult a physician for further evaluation and treatment.

3. Results, Treatment and Discussion

Skin scrapings from the lesion site confirmed the presence of *Sarcoptes scabiei* var. *cameli* (Figure 2A & B), as per the morphological characteristics described by Nayel & Abu-Samra (1986) [10]. The *Sarcoptes scabiei* mite is oval in shape, with short, stumpy legs and the third and fourth pairs of legs enclosed within the body margin, not projecting beyond the outer surface.

The infected camel was treated with two doses of injectable ivermectin (0.02 mg/kg, subcutaneously) at a seven-day interval, along with antihistaminic injections. The infected area was cleaned and treated alternately with benzyl benzoate

lotion in one session and commercial chlorhexidine cream in the next session (morning and evening) each day. The camel showed complete recovery by the end of two weeks after the initiation of treatment. The efficacy of ivermectin in treating sarcoptic mange has been well-documented in previous studies, Fowler 2010 [11], Charitha *et al.* 2013 [12], Goldust *et al.* 2013 [13], Palanivelrajan *et al.* 2015 [14]. Additionally, benzyl benzoate has been reported to effectively treat scabies in humans (Bachewar *et al.* 2009, Meyersburg *et al.* 2024) [15, 16]. The application of chlorhexidine helped to prevent secondary bacterial infections and served as an adjunctive skin cleansing agent in the healing process, as previously documented (Popovich *et al.* 2012) [17].

In this case, the camel owner experienced severe pruritus and skin rashes and was advised to seek medical consultation. Due to the limited availability of dermatological diagnostic laboratories in rural areas, clinical diagnosis was made based on the confirmed positive mange case in the camel and the handler's symptoms. The physician prescribed antihistaminic drugs and 5% permethrin cream, resulted in complete recovery within ten days. The effectiveness of 5% permethrin cream in human scabies treatment has been documented (Meyersburg *et al.* 2024) [16]. Given the zoonotic risk, untreated camels can serve as a source of infection for cohabiting animals and handlers. The zoonotic transmission potential of *Sarcoptes scabiei* has been reported in various clinical settings (Kinne & Wernery 2003, Chhabra & Gahlot 2010, Bandi & Saikumar 2012) [6, 3, 8]. However, there is limited literature on the zoonotic transmission risk from camels specifically (Hebel *et al.* 2025) [7]. This study highlights the need for early diagnosis and preventive measures to mitigate zoonotic spread.



Fig 1 A & B: Showing focal alopecia, thickened skin, erythematous lesions in the camel

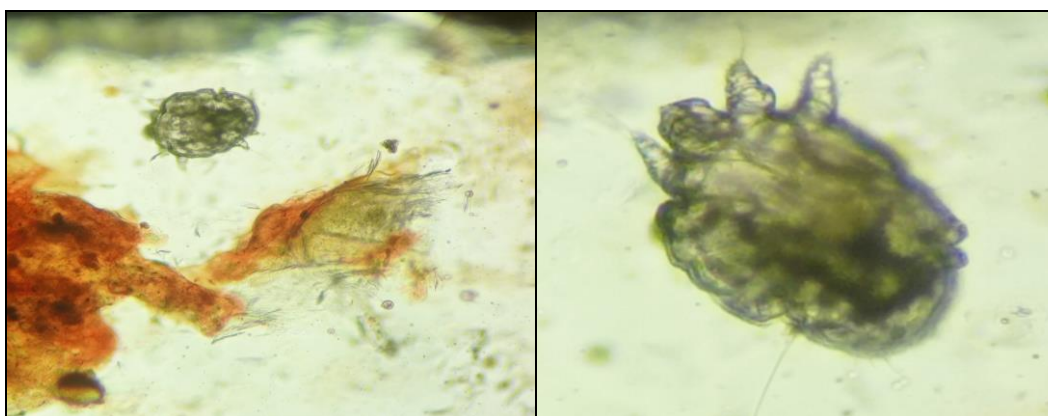


Fig 2 A & B: Skin scrapings showing *Sarcoptes scabiei* var. *cameli*

Additionally, the nomadic lifestyle of circus camels, along with poor housing and hygiene, may contribute to an increased risk of sarcoptic mange (Chhabra & Gahlot 2010) [3]. Routine skin scrapings and periodic screening of circus camels are essential, as sarcoptic mange is the second most prevalent disease in camels. Implementing randomized screening can help establish a healthy camel population in various clinical settings.

The animal showed complete recovery by the end of the second week and no recurrence was observed after two months of follow-up. The owner also recovered fully following treatment prescribed by a human physician.

4. Conclusion

This case report documents sarcoptic mange infection in a one-humped circus camel, confirmed through parasitological examination. Effective treatment using injectable ivermectin and topical benzyl benzoate and chlorhexidine was highlighted. The zoonotic potential of sarcoptic mange underscores the need for strict surveillance and preventive measures. Through a unified One Health approach, periodic screening and hygiene awareness campaigns are essential to curb zoonotic transmission and disease burden.

Conflict of Interest

Not available

Financial Support

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