

## Zoonotic Transmission of Canine Scabies: A Case Report

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### ABSTRACT

Scabies is a challenging skin disease caused by the mite *Sarcoptes scabiei* and affecting most of the animals including man. The zoonotic transmission of mange mite from dog to humans is reported in this article. The infestation has immense public health importance as it can be transmitted even after a transient contact with the diseased animal to man. Microscopic investigation of a skin scraping from active lesions confirmed the mite infestation in the dog while there was an absence of micro-parasite in the scraping obtained from infested patients as it was not burrowing a deep tunnel into the human skin owing to their host specificity. The infestations were successfully treated with the injection of Ivermectin @ 200 µg/kg body weight, subcutaneously in dog and with the application of 1% Gamma Benzene Hexa Chloride along with 0.1% cetrimide lotion in the human patient.

The occupational groups at high risk group of this evolving concern are veterinarians, kennel workers, pet owners, and their children, who frequently come in contact during their occupation and hobby with the infested dogs and puppies. Proper interventional measures should be adopted to prevent, control and eradicate the infestation.

**Keywords:** *Sarcoptes scabiei*, Infestation, Zoonotic transmission, Skin scraping, Treatment, Interventional measures

### INTRODUCTION

The scabies is a very contagious, ectoparasitic skin infestation of pet, domestic, laboratory, wild animals and man. It is caused by a mange mite *Sarcoptes scabiei*. It is a highly communicable parasitosis with specific lesions such as burrows; and nonspecific lesions such as a papule, vesicles and excoriations [1]. The canine scabies is characterized by intense pruritis, reddening, loss of hair and scabs. The mite is usually hosted specific and affects canids but it can transmit to other hosts like human beings. The mites burrow into the skin of the dog, complete the life cycle in 20-22 days, transforming in different stages viz. egg, larvae, nymph and adult via molting. The usual habitats of mites are abdomen, elbow, hock and flap of the ear.

The canine sarcoptic mange can be transmitted from dog to man. The dog, man's best companion, acts as a transport host for this ectoparasite. The dog is offering significant benefit to mankind but also poses a potential health risk. All kind of dogs (owned and stray dogs) are involved in disease transmission; even though the particular implication of each population is not clearly established [2]. The uncontrolled population of stray and semi-domesticated dogs in close proximity to increasing densities of human population in the urban environment is a common fact in developing countries which in conjunction with the lack of veterinary attention and zoonotic awareness increases the risk of disease

transmission [3]. The transmission of sarcoptic infestation from dog to human occurs mainly due to intimate handling, playing and closes contact with infected dogs.

The human scabies of animal origin is usually superficial, self-limiting and transient in nature, which is characterized by the sudden appearance of lesions, intense pruritis, papulo-vesicular eruption only in exposed parts of the body. There is an absence of burrows and low recovery rate of mites from the lesions [4]. The nutritionally deprived [4], occupationally exposed, overcrowded, poor [5], patients of AIDS and patients under immuno-suppressant drug therapy [6] are more prone to infestation. In the case of human beings, particularly pre-school and school-aged children acquired the infestation from their pet puppies [7,8]. Experimentally induced canine scabies in human beings was also documented by Estes et al. [9]. The infestation of canine scabies is widespread in distribution and causes human

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health hazards.

The other animals like sheep, goat, cattle, buffalo, camel, rabbit, etc. are also affected by such dermatoses and they further transmit the infestation to human beings [10]. The young animals are most commonly affected. The infestation adversely affects on health, productivity and economy of the country through high morbidity and even mortality [7]. The cases of canine scabies have been reported to be transmitted from dogs to the man from many parts of the world

[8,11,12]. This communication reports the transmission of canine scabies from dog to man.

#### MATERIAL AND METHODS

A female dog aged four years was found nearby the building of 2 MP R&V SQUAD NCC, Mhow, Malwa Plateau (Madhya Pradesh) infested with pruritic dermatitis. The dog was basically a stray dog. On detailed examination of dog, reddening, loss of hair, pruritus and severe dermatitis was observed (**Figure 1**).



**Figure 1.** Dog showing lesions of scabies on legs and ear pinna.

The skin scraping was made from the affected areas of the dog, with the help of a blade along with mineral oil, by selecting most active lesion. The scraping was taken to the Department of Veterinary Public Health, College of Veterinary Science and Animal Husbandry, Mhow for further examination. During the laboratory investigation, the scraping was placed on a glass slide, boiled with 10% potassium hydroxide solution, covered with coverslip and examined for the mite infestation under low power objective of the compound microscope.

Three local residents of the same building were also reported the sudden onset of the pruritus along with transient contact

with an infested dog. They were quite severe and accompanied by the discrete, tiny, erythematous, excoriated papules scattered over the body. The papules were 2-4 mm in diameter and a few were surmounted with vesicles (**Figure 2**). The pruritus was especially severe in the evening hours. The lesions appeared almost simultaneously in all of the individuals. The scraping from all the human patients was also made by using the same technique as described previously. The diagnosis of the infestation was confirmed by the history, clinical pattern, contact with an infested dog, result of the microscopic examination of the scrapings and response to the therapy.

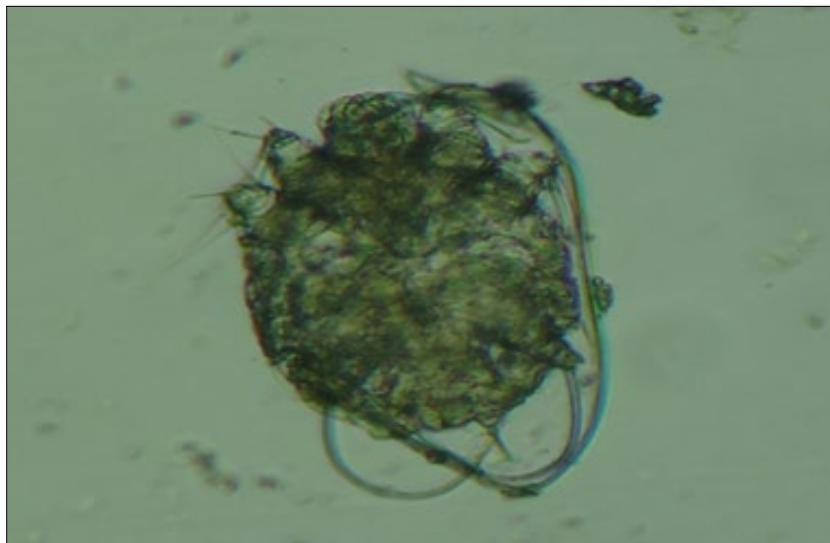


**Figure 2.** Human patient showing lesions of scabies on the legs.

## RESULTS AND DISCUSSION

On laboratory investigation of the skin scraping, obtained from the dog, the *Sarcoptes scabiei*, a scabies mite was easily demonstrated under the microscope (**Figure 3**). The skin scraping from all the symptomatic human patients were

found negative, no mite was seen on the microscopic investigation. Earlier some researchers, observed a similar pattern of the disease. They reported that canine scabies mite in the human do not show any burrow in the skin of the patient and there was an absence of the specific dermatologic image of scabies mite.



**Figure 3.** *Sarcoptes scabiei* from skin scrapings from an infested dog.

The dog was treated with the injection Ivermectin @ 200 µg/kg body weight, subcutaneously. The human patients were treated with the application of 1% Gamma Benzene Hexa Chloride along with 0.1% cetrimide lotion. The treatment continued for four consecutive days. The patients were advised to take a warm water bath followed by the application of lotion on the entire body from neck to downward. They were advised to wear clean clothes. There was a dramatic improvement in the patients within 48 h of the treatment. The patients were also instructed to clean all the areas of the dog's habitat and further spraying with deltamethrine insecticide. Isolation of the infested dog was also recommended.

## CONCLUSION

Canine scabies transmitted from dog to human is a contagious disease of immense public health importance as the micro-parasite can survive in man even after a transient contact with the source of infection. In the present investigation, tunnels were not observed in human patients as the parasite were of canine origin hence could not burrow deep into the human skin owing to their host specificity. The population at high risk group of this evolving concern are veterinarians, kennel workers, pet owners and their children, who frequently come in contact during their occupation and hobby with the infested dogs and puppies. It is recommended to avoid the close contact with such infested stray, wild, strange and exotic dogs and further proper interventional measures should be adopted to prevent, control and eradicate the problem as a whole.

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