Sarcoptes scabiei Infection in a Bonnet Monkey *(Macaca radiata)*

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ABSTRACT

A 15-year-old colony-born Bonnet macaque (*Macaca radiatae*) developed alopecia with active dermatitis, accumulation of thick scales, and fissuring of the skin, which were observed during routine health monitoring of the animal in seminatural environment. Examination of a skin sample revealed the presence of *Sarcoptes scabiei* mites. Papular and vesicular lesions were abundant over on the back and head regions of the animal, with a flaky and scaly appearance on the skin. Ivermectin was administered at 200 µg/kg of bodyweight by SC injection once daily for 5 days. Antihistamines and B-complex vitamins were also administered to the animal. These treatments were effective in ridding the animal of the infestation. This case is reported to alert keepers of exotic animals that macaques are susceptible to infestation by *S. scabiei*.

INTRODUCTION

Sarcoptic mange mites are arachnid parasites of mammals that cause mange infestation. The mites, which spend their life on their host causing various skin disorders, are distributed worldwide and may affect domestic and wild animals, including pigs, foxes, gorillas, and raccoons.[1–4] Animals with mange sometimes suffer weight loss and severe, untreated cases in animals with compromised immune systems may result in death.

Sarcoptic mange mites spread when the host is exposed to another mammal. Sarcoptic mange mites live year-round, but they are most common in the colder months. The purpose of this report is to describe a case of sarcoptic mange in a Bonnet macaque to alert handlers of exotic animals as to the susceptibility and zoonotic potential for *S. scabiei*.

MATERIALS AND METHODS

During routine health monitoring of the macaque colony at the Primate Research Center, National Institute Of Immunology, New Delhi, India, a colony-born, 15-year-old Bonnet macaque (*Macaca radiata*) was found to have generalized alopecia spreading from the head to the back region. There was also accumulation of thick scales in the head and back regions of the animal. Parasite infestation was suspected, and further investigation was carried out to confirm the cause of the skin condition.

The animal was maintained in open enclosure in a seminatural environment, as recommended by Guidelines for Care and Use of Animals in Scientific Research, Institut National des Sciences Appliquées, New Delhi, India in an animal facility registered with the Committee for the Purpose of Control and Supervision of Experiments on Animals. The macaques were fed with commercial primate pelleted feed, bread, fruits, and vegeta-

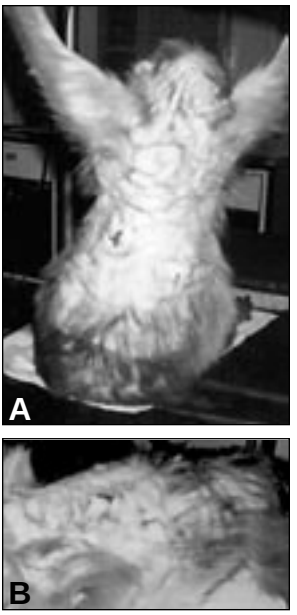

Figure 1. Lesions observed on head (**A**) and back (**B**) of Bonnet monkey with sarcoptic mange.

bles provided in various combinations three times daily. Water was available ad libitum.

A skin scraping was performed after immobilization of the animal with ketamine hydrochloride (20 mg/kg). The affected area was scraped with a drop of glycerin or liquid paraffin either on the skin or scalpel blade.[5] The skin samples were soaked in 10% potassium hydroxide for 12 hours and mounted on the slide for microscopic examination.

RESULTS

The affected animal was isolated from the other animals in the open enclosure, and additional testing was performed to determine the cause of the signs observed. Excessive hair loss from head to back regions with thickening and wrinkling of the skin was observed at the time of examination (Figure 1). Scales and crust were apparent on several skin areas, with varying degrees of erythema present on several regions of the animal's body. The general health of the affected animal appeared relatively normal, other than self-mutilation, itching, and plucking hair. Examination of skin scrapings revealed the presence of adult *S. scabiei*.

Following confirmation of the presence of *S. scabiei* by both macroscopic and microscopic examination, ivermectin was administered to the affected animal at 200 µg/kg body weight by SC injection for 5 consecutive days.[3] Antihistamines and B-complex syrup also were given as supportive therapy. Gradual improvement of the condition was observed after treatment.

DISCUSSION

Sarcoptes spp mites are ectoparasites of all mammals, but each mammalian host has its own race of *S. scabiei*. However, there is no remarkable morphological difference among mites that infest different hosts.[6] Zahler et al[7] reported that the genus *Sarcoptes* consists of a single heterogenous species genotypically. *Sarcoptes* in humans (*Sarcoptes scabiei* var *hominis*) and other strains of *S. scabiei* are morphologically indistinguishable from each other.[6,8,9] Generally, *Sarcoptes* mites from another animal species are temporary inhabitants of humans; they tend to cause transient rashes, but don't lay eggs.[10]

The mite burrows into the stratum corneum and feed on cells of stratum granulosum and stratum spinosum. Epidermal damage induces epithelial hyperplasia and development of parakeratotic crust.[11] *Sarcoptes* infestation in animals is characterized by hair loss, thickening and wrinkling of the skin, and scab and crust formation. Lesions are exudative and itching is intense, leading to excoriation of affected areas. Severe infestation can lead to permanent changes in the skin, inflammation, irritation, and death of the animal.

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