Successful therapeutic management of notoedric mange in rodents

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Abstract A total of six laboratory animals (four rats and two guinea pigs) from “Laboratory Animal Unit, (Govt. Medical College) Patiala” were presented to the Teaching Veterinary Hospital, GADVASU with the history of severe itching, alopecia, erythema, hyperkeratotic skin lesions involving face, head, ears, dorsal body and paws since last 1 month. The other animals of the unit (50 rats and 40 guinea pigs) were reported to have similar lesions. Skin scraping examination from the infested rats and guinea pigs revealed *Notoedres* spp. mite. The animals were treated with conjunctive drug therapy consisting of ivermectin, enrofloxacin and multivitamins. The treatment resulted in marked clinical improvement on day seven post-treatment and complete healing, with disappearance of crusts and scabs leading to normal skin, was recorded by day 25 post-treatment.

Keywords Guinea pig · Ivermectin · *Notoedres* · Rat

Introduction

Skin diseases of small mammals (rodents) are frequently presented problems to the veterinarians. Laboratory animals can become heavily parasitized both externally and internally, with consequent loss of time, money and

research effort (Scott et al. 2001). Such a situation can usually be avoided in the well-supervised and well-managed colony. The laboratory animals become prime target for parasite infections and infestations, like all animals kept in captivity, if appropriate preventive measures are not practiced (Griffiths 1971). Reports of ectoparasitic dermatosis in rats and guinea pigs have been on the records in the scientific literature (Griffiths 1971; Ronald and Wagner 1976; Klompen and Nachman 1990) but in Indian context the information is scarce (D’Souza et al. 1986; Singh et al. 2012). The present article documents dermatosis due to infestation of *Notoedres* spp. mite in rats and guinea pigs and its successful therapeutic management.

Materials and methods

Six laboratory animals (four rats and two guinea pigs) from “Laboratory Animal Unit, (Govt. Medical College) Patiala” with the inhand capacity of 50 rats and 40 guinea pigs were presented to the Teaching Veterinary Hospital, GADVASU with the history of severe itching, alopecia, erythema and hyperkeratotic skin lesions involving head, dorsal body, ear, paws since last 1 month. All the animals of the unit were reported to have same type of skin lesions. Clinical signs were recorded and skin scrapings collected in 10 % KOH solution were sent for microscopic examination both to the Parasitology Unit, Clinical Diagnostic Laboratory and Microbiology Unit of the laboratory for parasitic and dermatophyte examination, respectively. The samples were examined for mites and dermatophytes infestations by employing routinely used direct microscopic technique. Based on the identification of specific pathogen, the animals were treated with ivermectin (Neomec[®], Intas) @ 8 mg/L of drinking water once a week for 3 weeks (Kahn et al. 2005),

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enrofloxacin (Meriquin[®], Wockhardt) @ 50 mg/L of drinking water (Foster and Foil 2003) for 5 days and multi-vitamin preparation (Polybion[®], Merck) in drinking water for 30 days. Regular cleaning of the laboratory animal cages including replacement of beddings was advised to the animal attendants along with the recommendation that newly purchased healthy animals and young ones be kept separately or treated with same dose of ivermectin.

Results and discussion

Clinical examination of all the affected animals revealed alertness and activeness having a normal appetite. The skin lesions were characterized by alopecia, hypotrichosis, variable erythema, scaling, exudation and crust formation predominantly on head, ears, dorsal body and paws (Figs. 1, 2). Microscopic examination of skin scrapings revealed severe infestation with *Notoedres* spp. mite (Fig. 3) where as they were found negative for dermatophyte infestation. Mites were identified based on the morphology of legs, suckers and position of anus (Soulsby 1982). All the animals showed marked clinical improvement by day 7 of treatment. By day 15, the signs of pruritis ceased, skin lesions healed with growing of new hairs. Skin became completely normal by day 25 and skin scrapings were found to be negative. No adverse effects were noted during the treatment regime.

Notoedres predominantly inhabits the sparsely haired areas of the body and form tunnels within the stratum corneum. Oviposition and deposition of feces within the skin predisposes the host to mite allergen thereby, causing itching, alopecia and variable skin lesions like erythema, crusting, scaling and hyperkeratinization (Foster and Foil 2003). Earlier *Notoedres* spp. in guinea pig has already been reported from Bangalore, India (D'Souza et al. 1986).

Fig. 1 Rat showing clinical signs of alopecia, hypotrichosis, erythema over the head, ears and dorsum of body

Fig. 2 Guinea pig showing alopecia, crusting and scaling over the ears (arrow)

Fig. 3 *Notoedres* spp. mite recovered from rats and guinea pigs (40×)

Ivermectin is one of the commonly used miticidal drugs used to treat various ectoparasitic dermatosis in rodents (Evans 1984). They act by regulating the glutamate-receptor mediated chloride channels and/or by enhancing the release of GABA at presynaptic neurons resulting in paralysis and ultimately death of the mites (Mc Kollar et al. 1992). Besides, enrofloxacin was used to control secondary bacterial infection. Multivitamins were used to revitalize the health and appetite of animals. Vitamins are essential for normal skin development and their deficiency may lead to dry, flaky skin, seborrhea and alopecia.

The study concludes that ectoparasitic dermatosis in rats and guinea pigs is characterized by intense itching, alopecia, erythema, scaling, crust formation around head, ears, dorsal body and paws. Ivermectin @ 8 mg/L of drinking water at 7 days interval for three occasions is highly effective in the therapeutic management of notoedric dermatosis.

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