Therapeutic Management of Sarcoptic Mange Infestation in a Young Nomadic Camel

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ABSTRACT

A one-year-old male camel (*Camelus dromedaries*) was presented to the Animal Outpatient unit of Veterinary Clinical Complex, Veterinary College and Research Institute, Namakkal, with the history of itching, scratching and discolouration on the skin for the past two months. Clinical examination revealed patchy alopecia all over the body and thick scab-like lesions on the forelimbs, hind limbs, ventral aspect of the body, neck and face. Skin scraping revealed *Sarcoptes scabei sp*. The animal was treated with Inj. Ivermectin @ 0.2mg/kg, Inj. vitamin AD3E @ 10 mL weekly once for 5 weeks and Inj. Chlorpheniramine maleate @ 0.5 mg/kg SID for 5 days. Fresh leaves of *Acalypha indica* (*Kuppaimeni*) and *Azadirachta indica (neem*) were made into a paste at a ratio of 1:1 and advised to apply topically all over the affected areas, once a day for two weeks. The treatment protocol of Ivermectin combined with ethnoveterinary preparation showed better results from the second week onwards. By about the 5th week, the animal showed uneventful recovery.

Keywords: *Sarcoptes scabei,* Ivermectin, *Azadirachta indica, Acalypha indica*

INTRODUCTION

Sarcoptic mange infestation is one of the most common parasitic skin diseases of camel (*Camelus dromedarius*) caused by the mite *Sarcoptes scabei,* having zoonotic importance (Parsaniand Momin, 2008). Sarcoptes mite has a wide host range and apart from camels, it can infect cattle, dogs, sheep, goats, horses, swine, llamas, alpacas and humans (Bornstein, 2001). The disease is highly contagious and occurs at all times of year, but occurs more severely during winter months. The disease can spread among animals through physical contact with an infested animal and indirectly through fomites. Predisposing factors include stress, overcrowding, poor management and heat. At the initial stage, lesions are confined to the face, axilla (Beck, 2020) and inguinal regions with localised alopecia and pruritus. During the chronic form, head and flanks are affected, leading to severe irritation, itching and rubbing. The animal loses body condition, becomes weak, followed by anaemia, which thus affects general performance. Till now, there are no specific products available for the treatment of sarcoptic mange in camelids, and all the reports about effective treatments involve a longer period of time (Beck, 2020)

CASE HISTORY AND OBSERVATION

A one-year-old male camel weighing 120 kg was presented to the large animal outpatient unit of Veterinary Clinical Complex of Veterinary college and research institute, Namakkal, with the history of severe itching and discolouration of skin for the past two months. On general clinical examination, the animal was emaciated with a rough and dry skin and hair coat, normal lymph nodes and a rectal temperature of 36.8°C. Examination of the integumentary system revealed generalised alopecia on the ventral aspect of the body, lateral aspect of the abdomen, hindlimbs, face and neck. Exudative dermatitis with scaly crust formation and dark skin with

lichenification was noticed. The lesions were characterised by pruritus, scales, scab formation and alopecia (Fig 1). Skin scraping revealed the presence of *Sarcoptes scabiei* (Fig.2). From the clinical signs and skin scraping findings, the animal was diagnosed with sarcoptic mange infestation

Fig.1: Scaly lesions with scab and alopecia.

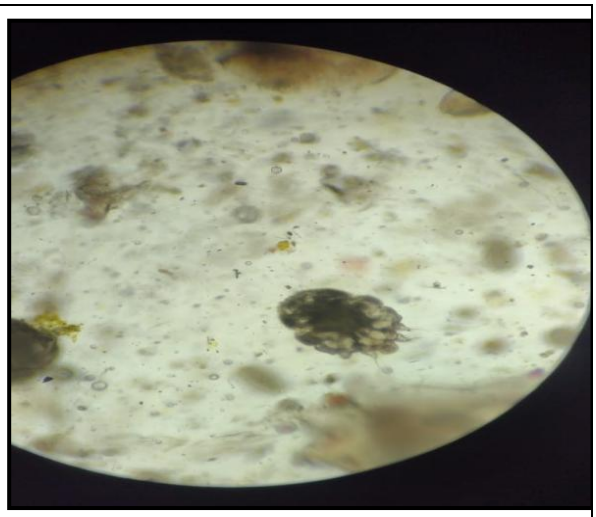

Fig. 2: *Sarcoptes scabiei* under 10x magnification

Fig.3: Improvement after treatment

Fig.4: After recovery

TREATMENT AND DISCUSSION

The camel was treated with Inj. Ivermectin @0.2mg/kg body weight subcutaneously and Inj. Vitamin AD3E intramuscularly @ 10 ml at a weekly interval for five weeks. Inj. Chlorpheniramine maleate @ 0.5mg/kg once a day intramuscularly for five days was also administered. An herbal paste containing a mixture of *Acalypha indica (kuppaimeni) and Azadirachta indica (neem)* in the ratio of 1:1 was advised for topical use once a day for five weeks. Lime-sulphur wash weekly once for a period of five weeks was also advised. Thus, a combination of ethnoveterinary topical application along with parenteral Ivermectin showed an uneventful recovery of the animal (Fig. 3 and 4). Mange is one of the most common parasitic skin diseases of camels (*Camelus dromedarius*) caused by the mite *Sarcoptes scabei*, having zoonotic importance (Parsani and Momin,

2008). *Sarcoptes scabei,* belonging to the Sarcoptidae family, is a minute parasite roughly circular in outline. All the legs of both sexes are short, and the third and fourth pair of legs do not project beyond the margin of the body (Soulsby, 1982). The pathogenesis of sarcoptic mange is that the parasite pierces the skin, suck lymph and feeds on young epidermal cells. It causes marked irritation that leads to itching and scratching. Inflammation of the skin occurs, which is accompanied by an exudate that coagulates and forms crusts on the surface. Excessive keratinization and proliferation of connective tissue take place, causing skin thickening. Humans contract the infection through direct contact with infected animals while inter-animal transmission occurs through direct contact or via infected fomites, such as trees, rugs and luggage (Qamar *et al.,* 2019).

Therapy includes antiparasitic agents (ivermectin, moxidectin, doramectin), anti-inflammatory drugs, antibiotics and vitamin supplements. Topical therapy containing benzyl benzoate is the drug of choice. Lindane 0.016-0.03% (wash, dip or spray), lime sulphur, 1.5% polysulphide sulphur (spray or dip) is effective (Longstaffe, 1982). Herbal preparations containing topical application of *neem* leaves *(Azadirachta indica), Kuppaimeni (Acalypha indica)*, and Turmeric *(Curcuma longa)* are also effective. Neem was found to have superiority in the healing of lesions and overall improvement of skin condition with short duration of treatment compared to ivermectin (Periasamy, 2018). Also, camels treated with neem formulation showed an increase in feed intake, weight gain and body improvement due to reduction in itching, irritation and restlessness. *Kuppaimeni* has anti-inflammatory properties, anti-bacterial properties, wound healing capacity and anti-ulcer properties. Therapy includes antiparasitic agents (ivermectin, moxidectin, doramectin), anti-inflammatory drugs, antibiotics and vitamin supplements. Topical therapy containing benzyl benzoate is the drug of choice. Lindane 0.016-0.03% (wash, dip or spray), lime sulphur,1.5% polysulphide sulphur (spray or dip) are also effective. Herbal preparation containing topical application of neem leaves (Azadirachta indica), Kuppaimeni (Acalypha indica), Turmeric (Curcuma longa) is also effective. Neem was found to have superiority in healing lesions and for overall improvement of skin condition with short duration of treatment compared to ivermectin. Camels treated with neem formulation showed a slight increase in feed intake, weight gain and improvement of body condition due to reduction in itching, irritation and restlessness. Kuppaimeni has anti-inflammatory properties, anti-bacterial properties, wound healing capacity and anti-ulcer properties.

CONCLUSION

Topical therapy using chemicals and antiparasitic agents is most commonly used against mange infestation. Locally available medicinal plants may provide an alternative means of mite control as they are a rich source of bioactive chemicals, environmentally safer, cost-effective, relatively non-toxic to humans and have a broad spectrum of insecticidal and acaricidal activities, which help to prevent the development of drug resistance (Isman, 2006). *Kuppaimeni, neem and turmeric* are quite effective against sarcoptic mange infestation along with the treatment of ivermectin.

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