

CASE OF A SARCOPTIC MANGE MANAGEMENT IN A 6-MONTH-OLD YANKASA EWE IN A SEDENTARY FULANI HERD IN TOHU VILLAGE, ZARIA LOCAL GOVERNMENT AREA OF KADUNA STATE

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ABSTRACT

A case of sarcoptic mange infestation in a 6-month-old Yankasa ewe weighing 22kg was presented to the student fellows in large animal section of Medicine Speciality, College of Veterinary Surgeon of Nigeria, A.B.U Zaria study centre during a routine ambulatory visit to a sedentary Fulani herd in Tohu village in Zaria LGA, Kaduna State. The infested ewe was in a flock of 13 sheep reared alongside with a herd of cattle. Physical examination revealed crusty lesions and areas of alopecia around the face, ear and limbs. Vital parameters were within normal range. Skin scrapping, blood and faecal samples were collected and taken to the Entomology, Clinical pathology and Helminthology laboratories of the Ahmadu Bello University Veterinary Teaching Hospital for identification of mites, helminthes and haemogram respectively. The laboratory results indicated a sarcoptic mite, marked eosinophilia and hypoproteinaemia while no parasite was observed in the faecal sample. Sarcoptic mange was diagnosed and the ewe was treated twice with ivermectin at one-week interval. The ewe apparently recovered after 2 weeks and the client was advised to treat all sheep in his farm.

Keywords: Sarcoptic mange, Ewe, Ivermectin, Tohu village.

INTRODUCTION

Sarcoptic mange is highly contagious skin disease caused by a mite and is transmitted most frequently by direct contact with infected animals (Taylor *et al.*, 2007; Reichard, 2016). The mite, *Sarcoptes scabiei* var *ovis* infests sheep and is quite hardy and can survive off the host animal in a home environment at room temperature for 1-6 days (Ahmed *et al.*, 2015). The parasite, *S. scabiei* var *ovis* is zoonotic (Provet, 2013) and animals in poor condition appear to be most susceptible. This mite lives permanently in the superficial layers of the skin and disease occurs as a result of the irritation caused by the presence of the parasite in the skin, or, most often, due to an allergic (hypersensitivity) reaction in the host. It infests non-wooly skin, usually on the head and face (Rahbari, 2009). Clinical signs do occur from 3-6 weeks after infection with the mite. The lesions manifest with formation of crusts and intense pruritus, excoriation, crusts, lichenification and secondary alopecia on face and ears and secondary bacterial infection and thickening of the skin in chronic cases (Reichard, 2016). Self-trauma is due to scratching and biting. Female mites form shallow burrows in the lower stratum corneum of the skin and lay eggs in tunnels under the skin. They hatch in 3-8 days and then develop into larvae, nymphs and finally adults. The whole of the lifecycle takes 17-21 days and is completed on the host animal (Radostits *et al.*, 2006). Affected animals have decreased reproduction, meat gain, and milk yield (Wall and Shearer, 2001). Diagnosis is made by examination of deep skin scrapings and identifying mites, eggs or mite faeces (Ogundiya *et al.*, 2012). The itchy pruritus can be controlled using anti-inflammatory drugs (e.g. corticosteroids), antibiotics may be needed if secondary bacterial infection is present, anti-seborrhoeic shampoos are also helpful to cleanse the skin (Provet, 2013). Positive diagnosis can be made only by scraping lesions on the sheep with a scapel blade and observing the mites in the scrapings. The present case reports the natural infestation of *S. scabiei* in a sheep and its therapeutic management with Ivermectin at field condition.

MATERIALS AND METHODS

History and physical examination

A 6-month-old Yankasa ewe weighing 22kg from a flock of 13 sheep with history of crusty lesion on the face was presented to the student fellows in large animal section of Medicine Speciality, College of Veterinary Surgeon of Nigeria (CVSN), Ahmadu Bello University, Zaria study centre during a routine ambulatory visit to a sedentary Fulani herd in Tohu village in Zaria LGA, Kaduna State. History revealed that the lesions were noticed about 4 weeks prior to the visit. The animal was managed on an extensive system of management and had no medical history. Physical examination revealed crusty lesions and areas of alopecia around the face, ear and limbs (Plate I). The rectal temperature was 38.8 °C; pulse 108 beats per minute, and the respiratory rate was 16 breaths per minute. The differential diagnoses were: mange, dermatophilosis, pediculosis and ring worm. However, on a closer examination of the lesions, the tentative diagnosis became mange. This was due to the fact that scabs in dermatophilosis can easily be peeled off, in pediculosis, there are no crusts and the lice or their nits would have been visible. Also in ring worm, the lesions would have been circumscribed. Blood and rectal faecal samples were collected and sent to Clinical Pathology and Helminthology laboratories respectively for screening. To arrive at a confirmatory diagnosis, deep skin scrapping at the periphery of the lesion was collected and sent to the Entomology laboratory for possible mite identification. The ewe was treated with Ivermectin (Ivomec[®]) subcutaneously at the rate of 0.2mg/kg b. wt. and was repeated after 1 week. The animal recovered completely after 2 weeks of revisit. Thus, there was complete resolution of the mange in respect of skin texture i.e; disappearance of crusts and subcutaneous appearance of fresh and shiny skin with hairs.



Plate I. Sarcoptic mange Yankasa Ewe with crusty lesions/alopecia on the face, ears and limbs

RESULTS AND DISCUSSION

Entomology laboratory:

The microscopic examination revealed presence of *S. scabiei* mites which was differentiated by rounded mouth parts, absence of eyes/stigmata, short posterior legs, presence of empodial claws and pulvillus on first two pairs of legs, presence of transverse ridges on dorsal surface of the body (Wall and Shearer 2001).

Helminthology Laboratory:

No parasite found in the faecal sample.

Clinical pathology laboratory result

Table I: Haemogram of a 6-month-old Yankasa ewe with sarcoptic mange in a sedentary Fulani herd in Tohu village in Zaria Local Government Area of Kaduna State

Parameter	Patient's Value	Reference range
PCV %	22	24-50
Hb g/dl	7.3	8-15
WBC x 10 ⁹ /l	7.1	4-12
Neutrophils %	30	10-50
Lymphocytes %	54	40-75
Monocytes %	06	0-6
Eosinophils %	28	0-10
Total protein g/dl	5.4	6-7.9

The primary signs observed in the present case are similar with that of Murthy *et al.* (2013) and they included pruritis, excoriation, crusts, lichenification and secondary alopecia on face and ears. The affected area was intensely excoriated because of itching, scratching and biting. Treatment was carried out with two shots of Ivermectin at 1 week interval because initial injection could only kill the mites but not the unhatched mite eggs. This perhaps may be due to inability of the drug to penetrate the thick egg shell and also due to its specific site of action (nervous system), Ivermectin may not be effective against the younger stages of the parasite inside the egg because the nervous system is not yet developed. However, administration of the second injection treats any newly hatched mites (Currie and McCarthy, 2010; Sharma and Signal, 2011). Administration of ivermectin has been reported to be effective in the treatment of mange in several countries (Sargison *et al.*, 1995; Sharma and Signal, 2011). All vital parameters of the animal were within the normal range showing that there is no systemic involvement in the condition. It is worthy of note that the result from clinical pathology examination showed marked eosinophilia indicating a high antigenic stimulation by the mites due to their burrowing activities and also due to the effect of their saliva and excreta (Sharma and Signal, 2011; Ameen *et al.*, 2012). The animal had a body condition score of 2 on a scale of 5 which agrees with the reports of Lughano and Dominic (2006), who reported that animals with mite infestation become emaciated and die out of exhaustion probably due to abstinence from grazing and constant scratching of body. This may explain the slightly low packed cell volume (PCV) and hemoglobin (Hb) values observed (Table 1). This finding agrees with the observation of Hafeez *et al.* (2007), who reported that Hb and PCV in mange infested animals is lower than normal. Also, poor body condition is usually associated with undernourishment which leads to decline in immunity and susceptibility to pathogens including ectoparasites (Taylor *et al.*, 2007). The hypoproteinaemia observed

may be associated with protein deficiency due to malnutrition and loss of plasma protein caused by dermatitis (Ameen *et al.*, 2012).

CONCLUSION AND RECOMMENDATION

The treatment of the ewe twice with ivermectin at one week interval against sarcoptic mange was effective. The ewe recovered completely after 2 weeks of treatment. The client was advised to treat the rest of the flock in the farm because Sarcoptic mange is contagious. The environment should also be treated in case mites have dropped off into bedding or floor coverings. Animal owners and veterinarians should consider mite control in sheep as part of routine control of ectoparasites.

REFERENCES

- Ahmed, Y., Bersissa, K., Yacob, H. and Dinka A. (2015). Mites of sheep and goats in Oromia Zone of Amhara Region, North Eastern Ethiopia: species, prevalence and farmer's awareness. *BMC Veterinary Research*, 11:122.
- Ameen, SA., Adedokun, RAM, Ajayi, JA., Oguntunde, MM. and Okewole, EA. (2012). Studies on epidemiological survey of mange infestation of small ruminants in Ogbomoshoh Areas of Oyo State, Nigeria. *Academic Journal of Animal Diseases*, 1(2):07-12.
- Currie, BJ and McCarthy, JS. (2010). Permethrin and ivermectin for scabies. *New England Journal of Medicine*, 362:717-25.
- Hafeez, UA., Zia-Ud-Din, S., Zafar, I., Abdul, J. and Zahida, T. (2007). Prevalence of sheep mange in District Dera Ghazi Khan(Pakistan) and Associated hematological/biochemical disturbances. *International Journal of Agriculture and Biology*, 9(6): 917-920.
- Lughano, K, Dominic, K. (2006). Diseases of small ruminants. A handbook "common diseases of sheep and goats in Sub-Saharan Africa. International Managers of the Livestock Production Programme (LPP) funded by DFID.
- Murthy, GSS., Nagesha, AM. and Hemanna, GK. (2013). Therapeutic management of Sarcoptic mange in a sheep flock. *Journal of Parasitic Diseases*, 37(2): 281-282.
- Ogundiya AI, Bemji MC, Adebambo OA, Dipeolu MA, Onagbesan OM, James IJ. (2012). Prevalence of mange among West African Dwarf sheep and goats and associated haematological and biochemical parameters. *Tropical Animal Health Production*, 44:1263–1269.
- Provet, (2013). Sarcoptic mange (scabies) www.provet.co.uk/petfacts/healthtips/sarcopteshtm
- Radostits, OM., Gay, CC., Hinchcliff, KW. and Constable, PD. (2006). Veterinary medicine: a textbook of the diseases of cattle, horses, sheep, pigs and goats. London: Elsevier; pp. 1608–1609.
- Rahbari, S., Nabian, S. and Bahonar, AR. (2009). Some observations on sheep sarcoptic mange in Tehran province, Iran. *Tropical Animal Health Production*, 41:397–401.
- Reichard, MV. (2016). **Mange in Sheep and Goats. Oklahoma State University.**
- Sargison, ND., Scott, PR., Penny, CD. and Pirie, RS. (1995). Treatment of naturally occurring sheep scab (*Psoroptes ovis*) in the United Kingdom with ivermectin. *The Veterinary Record*, 136:236-238.
- Sharma, R. and Signal, A. (2011). Topical permethrin and oral ivermectin in the management of scabies: A prospective, randomized, double blind, controlled study. *Indian Journal of Dermatology Venereol Leprol*, 77(5):581-586.
- Taylor, MA, Coop, RL and Wall, RL. (2007). Veterinary Parasitology. 3rd ed. Oxford, UK: Blackwell Publishing LTD; p. 874.
- Wall, R. and Shearer, D. (2001). Veterinary ectoparasites: biology, pathology and control. 2. Tokyo: Blackwell sciences Ltd.