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Use of Ivermectin in the Therapy of Sarcoptic Mange in West African Dwarf Goat: A Case Report

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Abstract

Sarcoptic mange, caused by the mite *Sarcoptes scabei*, is one of the most common types of Mange affecting goats in the tropics. It has been recorded to be the most difficult to treat of all the different types of mange affecting goats. It is also very contagious and can pose a serious problem in the flock if left untreated. Ivermectin is an ectoparasiticide which has been used with success in the treatment of mange in domestic animals and man. This report documents the management and treatment of a reported case of Sarcoptic mange in West African Dwarf goat breed in Umuahia, Abia State, Nigeria.

Keywords: Ivermectin, West African dwarf goat, sarcoptic mange.
Introduction

Mange is an important skin condition which affects a wide range of animals (Nwoha, 2011). It is caused by various types of mites which tunnel beneath the skin of infested animals, sucking blood and sometimes lymph. The tunneling activities of these mites cause sores and scabs and could also predispose the affected animal to infection by other pathogenic organisms (Terry, 2011). In goats, sarcoptic mange is a highly contagious skin condition. It is in fact a reportable disease in some parts of the U.S. According to the Merck’s Veterinary Manual (2011), the species of mites that may infect goats include *Sarcoptes scabei* (which causes Sarcoptic mange), *Chorioptes caprae* (which causes Chorioptic mange), *Psoroptes cuniculi* (which causes Psoroptic mange) and *Demodex caprae* (which causes Demodectic mange). In the tropics however, there are three main genera which cause the condition and they include *Sarcoptes*, *Chorioptes* and *Demodex* with *Sarcoptes* being the most pathogenic. Mange appears to be quite a problem because of its highly contagious nature and also because it could really be difficult to treat (Nelson, 2009). Dry mange in goats is called Sarcoptic mange and is caused by *Sarcoptes scabei var caprae*. The burrowing and feeding of the mites cause intense itching and scratching in the affected animals. As soon as the infection establishes, the animal starts to lose weight because of the hardening of the skin around the buccal area, making feeding difficult. The goat may then eventually lose condition and die (Karin, 2005). A high mortality rate is possible during ongoing infection therefore the need for either early detection and treatment, or prevention of the disease. In goats, the disease usually begins in the less hairy areas around the udder and abdomen and between the front legs. Tethering of goats could also predispose an animal to the condition (Jackson, 1986). It has been recorded that the condition has been successfully treated in cattle, pigs, sheep and cats by a single subcutaneous dose of Ivermectin (Lavingne and Smith, 1983; Schneck, 1988). Ivermectin is a broad spectrum systemic antiparasitic drug which is effective against endo and ectoparasites in animals. It has the ability to persist in plasma tissue for prolonged periods. Ivermectin is a semi-synthetic derivative of a family of macrocyclic lactones called the avermectins. It acts mainly by initiating an influx of Cl- ions through the cell membrane of invertebrates by activating specific ivermectin-sensitive ion channels. The resultant hyperpolarisation leads to muscle paralysis. This report documents the management and treatment of a case of Sarcoptic Mange in a West African Dwarf goat breed.

Complaint and History

A client brought a complaint to the clinic concerning his four year old, male, West African Dwarf (WAD) goat which he was keeping with about two other goats on his backyard farm. He complained of widespread dry, scaly crust lesions on the skin around the neck and thorax of the goat. He also complained that the animal was losing weight alongside the loss of the hairs around the crust. He reported that the crust had started as a small area of scanty hair and crusts which later spread to the flank area within about a month. Mange was suspected and a visit was made to the farm to observe the animal. The animal was seen rubbing itself against walls. There were large areas of alopecia with crusty lesions on the skin of the animal. The body condition was scored at 3. It was also observed that the animal was being visited by stray goats and sheep from surrounding farms.

Diagnostic Plan

Clinical and laboratory examination were employed to arrive at a diagnosis. The clinical parameters of the animal were recorded. The faeces of the animal was found to be normal dry green to brownish, the animal was listless and had a poor appetite. The animal was equally examined for ectoparasites on the skin and ears. Skin scrapings were collected from affected areas in order to confirm diagnosis. The scrapings were digested in Potassium Hydrochloride (KCl) which had been heated to boiling point for about 3 minutes. The boiled sample was then allowed to cool and the sediment collected and put on a microscope slide.

Results
A cover slip was placed over the sample on the prepared slide which was then viewed under the light microscope both at x40 and x100 magnifications. Mites (*Sarcoptes scabei var caprae*) were seen and confirmed the diagnosis of Sarcoptic mange.

**Treatment and Control**

Ivermectin injection was administered subcutaneously at 200 µg/kg body weight to the animal. A comprehensive cleaning and clearing of the animal pen was carried out. Diskol® was also used to thoroughly wash the surroundings of the goat pen so as to eliminate any possible hiding places for the mites. Cracks and crevices which also serve as habitats for these mites were immediately eliminated from the goat’s surroundings. The client was advised to keep away stray animals (sheep and goat) from visiting the goat pen. Barricades were introduced to ensure that other animals do not wander into the pen in search of fodder or water.

**Discussion**

The animal responded well to Ivermectin therapy and by 4 weeks post treatment, skin lustre had started to return. The crusty areas were already being replaced by glossy black hair. Itching had also stopped and the body condition had markedly improved. The animal was also more alert with an improved appetite. Ivermectin has been reported by other workers to be very effective in the management of mange in goats (Manurung *et al.*, 1990; Zamri-Saad *et al.*, 1990; Murphy *et al.*, 2013). Ivermectin is derived from avermectins isolated from products generated from *Streptomyces avermitilis*. It has been effectively used in different livestock against parasites including mites and lice. Subcutaneous injection of the drug improves its bioavailability and subsequently its effectiveness, hence the subcutaneous route was applied in the case.

**Conclusion**

In conclusion, although scabies is not a deadly disease, it is highly significant because of its highly contagious nature and the significant losses it causes due to damaged skin especially during the chronic course of the condition. Farmers should be encouraged to imbibe best practices such as adequate nutrition and good hygiene in and around their animal pens. This will enhance immunity of the animals and protect them against the condition respectively. Straying of animals should also be discouraged in order to prevent undue spread of the condition from one farm to another.

**References**


