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## Diagnosis and therapeutic management of psoroptic mange in large white Yorkshire piglets: A case report

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### Abstract

Mange is a contagious skin disease affecting various groups of animals. Psoroptic mange is a severe skin infectious condition of farm animals; it is highly contagious and is responsible for huge economic losses in many farm animals in form of cost of treatment and reduced skin and meat quality. 90 days old Large White Yorkshire weaned piglets of piggery unit of Instructional Livestock Farm Complex, College of veterinary science, Rajendra Nagar, Hyderabad was presented with the history of severe rubbing of the skin against the sides of the pen, Erythematous lesion all over body, hair loss and weakness. The clinical lesion of alopecia, superficial skin fissures and crusts were observed around dorsal region, flank region, both hind legs, eyes, nose and ears. Skin scrapings were collected and processed by 10% KOH digestion method. Skin scraping examination revealed presence of psoroptic mite. The affected pigs were treated with two doses of Ivermectin @200 µg/kg body weight at weekly interval, cefpodoxime @10mg/ kg body weight once in a day for 5days, chlorpheniramine @0.5mg/kg body weight for 3 days along with topical application of povidone iodine once in a day and Ascabiol lotion twice in a week for one week. After treatment, piglets completely recovered from psoroptic mange and the parasitological examination of skin scraping revealed absence of eggs and mites. Hence, the treatment given was effective against psoroptic mange in piglets.

**Keywords:** piglet, psoroptic mange, ivermectin, cefpodoxime

### Introduction

Psoroptid mites are obligate parasites of mammals. They dwell and feed on the surface of the host's skin. Survival time for some of these mites off the host may be two weeks or more but common in farm animals and very rare in swine. Parasites normally do not infect different species of animals indiscriminately under natural conditions; they show varying degrees of preference for hosts and for habitats within them. Incidental parasites usually do not survive, or at least do not reproduce in the faulty host, but in some cases, they can be extremely pathogenic [11]. *P. ovis* and *P. natalensis* have been reported to cause psoroptic mange in farm animals. [7, 15]. Psoroptic mange in both sheep and cattle seems to vary in its severity according to the variant of *P. ovis* present, with the most severe form being a reportable condition caused by an especially virulent genotype and known as 'sheep scab'. This form has been eradicated from the USA, New Zealand, Canada, and Australia, although it still persists in many other parts of the world. Thus, particularly for further eradication efforts against psoroptic sheep mange, genotypic analysis of the involved mites may be an especially valuable tool [5]. Fifty species in about 30 genera of psoroptid mites are known from at least 11 mammalian orders, with the greatest number on primates [3]. Three genera have veterinary importance for domestic animals.

The generally oval-shaped body is dorsoventrally flattened, has a striate cuticle with scattered setae but no spines, and bears longer legs and more prominent mouthparts than those of sarcoptid mites are diagnostic features of psoroptes mite. Psoroptes mites are superficial skin parasites which generally live on the skin covered with hairs. Infestation may be chronic or even subclinical and localized, often in the ear of the host, or it may be acute and more generalized over the entire body, when it is described as psoroptic mange [2]. People handling mange-affected animals should wear gloves and should wash thoroughly immediately after handling. Infected carcasses should be frozen prior to examination, to prevent the spread of the mites [12].

The present case study is one of the rare infectious conditions of swine which might be transmitted by semi-intensive rearing system of sheep and goat surrounded by piggery unit and nearby rabbitry or indirect transmission by animal handlers and utensils.

### History and Clinical Signs

Group of Large White Yorkshire weaned piglets (90 days old) presented with history of severe itching, hair loss and weakness. Clinical lesions of superficial skin fissures, small crusts and loss of hair was observed on hind legs, eyes, nose, ears, dorsum and flank region, (Fig. 1, 2, 3 &4). The piglets were maintained in intensive rearing system of housing. From the affected piglets, skin scrapings were collected for parasitological examination. A characteristic clinical symptom of persistent skin irritation with small red spots and crusts has been suggestive of mange infestation.



**Fig 1:** Crusty lesions on ears.



**Fig 2:** Erythematous and crusty lesions on dorsum.



**Fig 3:** Crusty lesions on nose and eyes.



**Fig 4:** piglets having erythematous lesions on dorsum.

### Diagnosis

A tentative diagnosis of mange was made with the following differentials: Allergic dermatitis, Bacterial dermatitis, Fly bite dermatitis, fungal dermatitis and Hypovitaminosis. To further confirm the diagnosis, a deep scraping of the skin was done until capillary blood oozes out. The scrapings were collected into a sterile test tube and was digested with 10% Potassium hydroxide (10% KOH), after digestion the mixture was centrifuged to collect sediment and examined under the 10x power of microscope to check the presence of mites. *Psoroptes* spp. is a typical non-burrowing mite, up to 0.75mm in length, oval shape and with all the legs projecting beyond the body margin. Its most important recognition features are the pointed mouthparts, the rounded abdominal tubercles of the male and the three jointed pedicles bearing funnel-shaped suckers on the legs [3]. Based on the anatomical structure the mites identified as *Psoroptes* spp. (Fig. 5).



**Fig 5:** Microscopic image of psoroptic mite

### Treatment and discussion

The present case study is one of the rare infectious conditions of swine which might be transmitted by semi-intensive rearing system of sheep and goat surrounded by piggery unit and nearby rabbitry or indirect transmission by animal handlers and utensils. Infestation with *Psoroptes* has been reported all over the world in various farm animals, but none has ever been reported in swine. A male weaner large white breed pig of age 3 months weighing 10kg was presented with skin lesions and areas of alopecia during a routine farm visit by the handlers [1]. The disease is highly infectious, and is transmitted via fenceposts and other structures that livestock

use when scratching themselves [6] thus, the possibility of this infestation could be nearness to sheep paddock or where sheep do graze as is the case in DUFARMS where sheep are grazed round the piggery in a semi-intensive method of rearing. Antigenic materials in the mite's faeces are thought to be the cause of a hypersensitivity reaction in the host, which leading to clinical manifestations Psoroptic mange according to [13, 9]. Affected piglets were treated with two doses of ivermectin @0.2mg/kg body weight subcutaneously in weekly intervals. similarly, treated with Ivermectin (300mcg/kg) subcutaneously, as a starter dose, this was repeated after 7days, making a two-dose treatment regime [1]. The treatment consisted of two administrations of 1% ivermectin at 1 mL/33 kg of body weight subcutaneously over an interval of 10 days [8]. The positive animals were treated with ivermectin 300mcg/kg body weight subcutaneously as a single treatment [4]. Given Cefpodoxime @10mg/ kg body weight for 5days per orally to control bacterial infection as well as to prevent secondary bacterial infection. Oxytetracycline (20mg/kg) Long acting was also given to the pig intramuscularly. Oxytetracycline was administered because of the neutrophilia seen which is an indication of the possibility of a secondary bacterial infection superimpose with the mange. The oxytetracycline was repeated 48 hours after it was initially given to the animal. The Oxytetracycline being a long-acting drug will also help in preventing further bacteria invasion of the exposed skin where the serum is oozing out from [1]. Given Chlorpheniramine maleate @0.5mg/kg body weight for 3 days per orally as a anti histamine to control the itching and scratching sensation along with topical application of povidone iodine once in a day and Ascabiol lotion twice in a week for one week. After treatment, piglets were recovered completely and no itching and skin lesions observed. clinical examination revealed complete disappearance of encrustation and erythematous lesions on body. Parasitological examination of skin scraping after treatment, revealed no evidence of mites. There are no commercial vaccines for mange. Experimentally, inoculation with *Psoroptes ovis* antigen has reduced the severity of mange. This introduces the future possibility of controlling the effects of mange without the use of acaricides [10, 14].

## Conclusion

In the present clinical study, it is concluded that *psoroptic* mange in swine has a major constraint and characterized by intensive itching, alopecia along with the skin lesions mostly over the dorsum, ears, eyes, nose. Swine mange can be treated successfully with two doses of ivermectin in weekly intervals along with antibiotics and supportive treatment.

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