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Short communication

Demodectic mange in fattening pigs in São Paulo, Brazil

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Abstract

An investigation was conducted of mange in five Large White adult sows refractory to pyrethroid treatment (cypermethrin 15%). The most important clinical signs consisted of erythema, hyperkeratosis, alopecic macules, micaceous scaling, follicular pluging, and numerous comedones, especially on the facial region. Skin samples were scraped and punched. Elongate mites were found that were classified as *Demodex* sp., according to the morphological and histopathological characteristics. The protein, vitamin, and mineral levels contained in the rations were considered to be lower than those recommended to attend the requirements of fattening pigs. Adjustment of the rations was adopted, and the treatment of animals with ivermectin premix (450 g/tonne of food) daily orally for a further 7 days was prescribed. The success of treatment was observed 15 days after adoption of these measures, when the beginning of remission of signs was observed. No mites were found on scrapings or biopsy punches after the treatment of the sows.

Keywords: *Demodex phylloides*; Pig; Swine; Arthropod; Demodicosis; Mange

1. Introduction

Swine demodicosis is an uncommon disease caused by the mite *Demodex phylloides*, an obligate parasite of pigs, which in low numbers is part of the normal cutaneous fauna. The disease is characterized by alopecia and presence of abscesses in the facial region, pruritus, and body weight loss (Sobestiansky et al., 1999).

Generally, the disease can be present without evident symptoms, and therefore, information on the incidence and distribution is rare in scientific literature. However, Chakrabarti and Pradhan (1985) verified in India that 1.44% of the animals presented signs of demodectic mange, showing the low incidence of the disease in the swine population.

It is believed that in natural conditions the development of demodicosis is restricted to immunocompromised pigs (Sobestiansky et al., 1999).

The purpose of this communication is to relate cases of swine demodicosis in Large White adult females resulting from nutritional deficit, treated successfully with ivermectin.

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2. Case report

A pig producer contacted the Unoeste Veterinary Hospital, Presidente Prudente, São Paulo, Brazil, complaining of dermatopathy and weight loss in a group of 30 purebred Large White sows. The farmer reported that it was the first time that this problem had occurred on the farm. This event, according to the farmer, began in December, during the rainy season. According to the producer, the animals were treated topically with cypermethrin 15%. The treatment was carried out 1 month before the farmer contacted the hospital. However, the disease was resistant to the treatment according to the producer.

On investigation of the farm, it was verified that the herd was composed of 150 fatted Large White/Duroc purebred and cross-breed pigs. Among these, 30 were sows, but only 5 Large White adult females showed skin lesions. The sick animals were 12 months old. They had an average body weight of 100 (±10 kg), and were housed in the same pen (12 m^2) but with no other sows. The pigs considered healthy and of the same age had approximately the same body weight (105 ± 10 kg).

The pens were built with a concrete floor. Adjacent to each pen there was an area of dirt floor of approximately 40 m^2 (dunging area). The two areas were separated by an iron gate. Hygienic conditions of the farm were considered regular.

The pigs had free access to water and were fed twice daily on food manufactured by the farmer at his property and a commercial proteinic supplement. It was verified that the protein, vitamin, and mineral levels were approximately 20% lower than those recommended by the National Research Council (NRC) (1988) necessary to attend to the nutritional requirements of the sows.

At the clinical examination, moderate pruritus and regional lymphadenopathy was observed. The cutaneous lesions were characterized by the development of erythema, hyperkeratosis, alopecic macules, micaceous scaling, follicular pluging, and numerous comedones. The lesions were seen in the periorbital region, commisurae of the mouth, convex surface of the ear pinna, paws, and nasal planum. Pustules on cervical, thoracic, and inguinal regions were seen. The affected animals were otherwise healthy, and the physiological parameters were in the normal ranges.

The skin from the conchae of the ear and of the cervical and periorbital regions was carefully scraped with a curette. Pustules were pressured in order to increase the recovery of possible live mites. The material was placed on a petri dish and incubated at 30 °C for a minimum of 8 h before being examined microscopically (Vega et al., 1998).

Skin samples of the affected regions were punched and fixed in buffered formalin 10%. The samples were submitted to histological processing and stained by hematoxiline–eosine.

Treatment of animals with cypermethrin 15% was repeated following the manufacturer recommendations. However, no remission of the lesions was observed.

Thus, the rations were adjusted according to NRC (1988) for all the fattening pigs of the farmer, and the sick sows were treated with ivermectin premix (450 g/tonne of food) orally on a daily basis for a further 7 days.

3. Results

The scrapings, before and after the treatment with cypermethrin 15%, revealed elongate mites, about 0.24 mm long. They had a thorax bearing four pairs of stumpy legs, and an elongated abdomen which was transversely striated on the dorsal and ventral surfaces. Based on these morphological characteristics, the mites were classified as the genus *Demodex*, according to Soulsby (1982).

On histopathological examination numerous forms of mites adjacent to the follicles were observed. No extrafollicular parasite was observed and neither were adjacent pyogranulomas. The inflammatory response was minimal and characterized by the presence of rare neutrophils.

Fifteen days after the adoption of these measures remission of the signs was observed. No parasite was verified in skin scrapings after the treatment and there were no relapsed cases 2 months after cessation of therapy.

4. Discussion

The participation of *Demodex* in the pathogenesis of skin lesions has been believed to be uncommon in

pigs. According to Bowman (1998), mites are found in nodules around the eyes and on the snouts of pigs. These lesions later spread over the underside of the body, as seen in the sows of this report. Histopathological findings were similar to those referred to by Sobestiansky et al. (1999), who described the main skin alterations of pigs with demodicosis as dilated pilose follicles, in different degrees, containing mites, with a minimal inflammatory response. According to the authors, different degrees of folliculitis, perifolliculitis, furunculosis, and granuloma formation can be observed in a lesser number of cases.

In some species, including man, demodicosis has been associated with immunocompromised patients. Slingenbergh et al. (1980) related demodicosis to the low level of nutrition of cattle, and Mueller (2004) mentioned poor nutrition as a predisposing factor of demodicosis in dogs. Probably, the poor diet led the sows to a subnormal or down-regulated immune response, resulting in an increase of mite population and evolution of the lesions. It was observed that sick sows presented lower weight than those without clinical alterations. However, in both groups the weight of the animals was inferior to that established by Cavalcanti (1984). The author considers that under Brazilian conditions, pigs attain the weight of 110–120 kg at the age of 8 months, as soon as they reach sexual maturity. The adjustment of nutritional requirements and treatment of the animals with ivermectin that results in a decrease of mites in the skin of animals and remission of clinical signs supported the hypothesis of a relationship between nutrition and demodicosis.

Ivermectin has been recommended for treatment of demodetic manges in goats (Strabel et al., 2003), hamsters (Tani et al., 2001), dogs with amitraz-resistant generalized demodicosis (Ristic et al., 1995), and immunocompromised people (Aquilina et al., 2002; Damian and Rogers, 2003). Although no product is registered in Brazil for the treatment of *Demodex* mites in pigs, ivermectin was adopted because of the facility of its administration, although it is indicated for gastrointestinal, renal, and pulmonary nematoids, as well as *Sarcoptes scabiei* and *Haematopinus suis*.

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