

Sarcoptic Mange

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Introduction

Dogs are known to be human companions and friends for a long time. They are pets that experience different challenges from parasites. *Sarcoptes scabiei* mites are among those that infect dogs with scabies or Sarcoptic Mange, a highly contagious skin infection (Ward, 2018). The mites causing the disease are known to resemble spiders; hence they are known as spider-like mites, canine scabies, or *Sarcoptes*. They are dangerous mites that burrow into the skins of pets, for example, dogs, cats, and even pigs. The females lay eggs under the skins, and upon hatching, they die, leaving the larvae to continue with the cycle and feeding on the host. This causes severe pruritus, which is miserable (Kee's, 2018). When such a pet has close contact with another one, it surely transmits the infection. However, when a dog owner realized some signs and symptoms leading to the disease, visiting a veterinarian is necessary to ensure the dog receives the required treatment. Upon the dog receiving the necessary treatment, there is a need to take necessary precautions to avoid re-infection cases by observing hygiene and avoiding interaction of the dog with others in town. Sarcoptic Mange is preventable by observing the required veterinarian guidelines.

8

What is Sarcoptic Mange

Sarcoptic Mange is a skin disease that is caused by a parasitic mite known as *Sarcoptes scabiei* that burrows beneath the surface of the mammalian host's skin. The sarcoptic mange mite is commonly found on domestic as well as wild dogs, which include coyotes, wolves, and red foxes. These mites can be transferred or transmitted to domestic dogs through close contact with infected dogs, either wild or domestic, in doggies' daycares, dog parks, or grooming parlors.

Sarcoptic mange mites do not survive in the environment for a long period before dying (Ward, 2018). Nevertheless, some dogs may pick them from the surrounding if the mites were not dropped long ago by an infected dog.

The parasites are small and round, with a diameter up to 0.4mm in diameter. They spend their life cycle on their host, and their transmission is basically through close contact with an infected animal (Thompson, 2020). The sarcoptic mange mites are known to feed superficially on their hosts' skin. They form small burrows and some feeding pockets. However, these parasites' mating takes place on the skin surface. The female mites burrow deeper in the hosts' skin to the lower sections of the epidermis, where they feed on the fluid and debris that is as a result of tissue damage. Beneath the skin, they burrow tunnels and some side-tunnels, creating rooms for laying eggs. The entire period of eggs hatching and growth from larvae to the adult stage takes 2-3 weeks, and the process of feeding on the host continues.

The disease is also known as canine scabies. It is known to be a highly contagious skin condition that can be transmitted to mammals. The condition triggers immune reactions, which include some severe and desperate skin itching, sometimes extreme itching, pain, and hair loss (alopecia) (Thompson, 2020). The disease is characterized by a rapid formation of thick yellow crusts on the affected animal, for example, a dog. The itching brings great discomfort situations to a dog, which is not similar to one caused by fleas since the crusts formed by the skin irritations worsen and cause permanent hair loss. Areas with thinner hair, such as the ears, ankles, bellies, and elbows, are among the most prone to be severely affected. It is necessary to note that not all dogs will show symptoms as they might have different patterns (Ward, 2018).

When the condition is not treated, the wounds are likely to be infected, the animal loses weight, and experiences septic shock, leading to death. Sarcoptic Mange can as well be passed on

to humans. Sarcoptic mites are responsible for many human scabies conditions, but on the other hand, the canine variant prefers dogs. Humans experience limited transmission cases by their dogs. When a dog is infected, it rapidly develops hypersensitive or allergic reactions to the sarcoptic mites, which leads to severe pruritus. When the number of mites found on a dog's skin at any given time is very small, and skin scrapping can be an effective method to get rid of them before they get deeper into the skin (Thompson, 2020). Additionally, most are the time when sarcoptic Mange is confused with demodectic Mange. These are two different conditions as a different parasitic mite causes them.

12

Epidemiology of sarcoptic Mange in dogs

The transmission of sarcoptic Mange from infected animals to new hosts is always by direct or indirect contact. In most cases, it involves the transfer of larvae from the surface of the hosts' skin to new hosts. The larvae start consuming on the skin of the new hosts, and they become infected as well. Sarcoptic scabiei are highly predominant in the fox population in the urban areas of Ireland and other countries like the U.K. This high population of foxes has contributed immensely to high mortality. Studies show that the fox population has been responsible for the transmission of mites to the dog population, especially the stray dogs in the urban areas. This has continuously led to the spread of infections to pets from infected stray dogs (Thompson, 2020).

Transmission of sarcoptic Mange in dogs

Sarcoptic mange mites is a highly contagious disease. It can be transmitted from one dog to another with much ease as well as to humans. It is transmitted by direct contact with an infected dog. However, there is a need to note that mites do not survive for a long period off a host. They are known to live on dogs throughout their entire lives and can survive off the host for up to 48

hours (Astorga et al., 2018). When an infected dog shares bedding with other dogs, the chances of such dogs getting the infections are high since the mites are always dropped on the beddings. Transmission of the mites can as well happen when a caregiver uses the same brushes to groom the pets, which risks the transfer of the mites from the infected pet to other healthy ones.

Dogs are social animals that interact comfortably with each other. Most are times when people walk with their dogs along streets, parties, parks, and other social areas. In these areas, dogs interact and play around, facilitating close body contact (Astorga et al. 2018). When one of the dogs incidentally has the sarcoptic Mange, it becomes easy for other dogs to contract the disease since the mites will be attached to them. When a dog lies on areas with mites dropped by infected dogs, the dog will accidentally become infected. This means that hygiene is not always the cause of this infection but close contact between healthy and infected dogs.

Clinical signs for Sarcoptic Mange

There are some signs and symptoms that can help a person predict whether a dog is infected with Sarcoptic Mange. These signs sometimes might be confusing since there are other conditions with similar symptoms. Some of the symptoms include severe itching, reddening and irritations on certain sections of the skin, yellow crusts forming on the irritated skin, rolling, scraping, and kicking behaviors, thickening of the dogs' skin, and the dog having small track marks as a result of mites burrowing (Duggan, 2019). Additionally, lesions are the damages in the tissues of a dog due to scabies, which may include crusts, papules, excoriations, and alopecia. In the early stages of this disease, lesions consist of mild skin irritations and itching conditions, fine crusting, and scaling, which happens on the edges of the pinnae (Valdeperes et al., 2019). They can also spread to the facial areas and other sections of the body like hocks, brisket, elbows, and ventral abdomen and can eventually spread all over the dog's body.

An affected dog is likely to develop some systemic signs of disease like anorexia. This is a condition characterized by weight-loss. Peripheral lymphadenopathy is another common condition a dog can experience. Dogs with severe conditions will have ceaseless scratches and bites, which sometimes cause excoriation. The degree of pruritus is mainly worsened when the hypersensitivity to the sarcoptic mange mites' allergens develops. Lack of treatment can cause the dog to be weak and emaciated (Duggan, 2019). The skin of the affected dog becomes deeply wrinkled and dry. Hair falls out from the damaged skin leaving sparseness of hair. This gives the mites a comfortable environment to proliferate. In severe cases, scabies can lead to affected dogs' death, as it has been for many urban foxes in Ireland. Surveys have shown that multi-dog household has contributed to many dogs that harbor mites, and some do not show signs at all (Duggan, 2019).

Diagnosis for Sarcoptic Mange

A dog owner is likely to notice when his or her dog is suffering from sarcoptic Mange by realizing some extreme itching and discomfort in the dog. Though there can be multiple issues that can lead to such an itching effect, it is necessary to immediately contact a veterinarian (Valdeperes et al., 2019). Then, keep the infected animal from others since the disease is highly contagious. Visiting a veterinarian can be a good idea to help determine the type of infection the dog has by a thorough examination of the dog to identify the condition effectively. Scraping the itchy section of the skin might enable the vet to get some clue after realizing some eggs, mites, or mite feces. Checking areas where the dog cannot reach can be the best idea. However, in some cases, finding the mites can be difficult since they might have burrowed beneath the dog's skin (Rowe, Whiteley & Carver, 2019). A veterinarian normally prescribes anti-mite treatment methods.

However, there are multiple ways to conduct a diagnosis to help determine the type of disease a dog is suffering from. Allergic skin diseases like atopy are first considered. In the early

stages, sarcoptic Mange can mimic conditions like atopic dermatitis. In this case, a vet might go for anti-inflammatory doses of glucocorticoids to help manage the itching condition. This means that eliminating Mange will be impossible. Other related conditions that can be identified and turn to be somehow similar to sarcoptic Mange include; demodicosis, superficial pyoderma, Malassezia dermatitis, dermatophytosis, and pemphigus foliaceus (Valdeperes et al. 2019). Nevertheless, the diagnostic procedures may comprise understanding the history of the itching experienced by a dog, the itching condition with time, and how it responds to glucocorticoids. These can help to understand the more advanced technique to use.

Physical examination procedures are used. This examination is conducted to try to identify the mites of certain sensitive parts of the dogs. The vet can rub the ear margin using the fingers hence causing the dog to scratch. Although not a technique to give 100 percent results, it is a technique with a high suggestion of scabies (Valdeperes et al., 2019). Even with negative results, treatment should be considered. A vet might consider checking whether the dog is suffering from sarcoptic or Malassezia and superficial pyoderma through the tape strips method. In this technique, multiple samples are advised (Rowe, Whiteley & Carver, 2019). This technique might be difficult to diagnose sarcoptic Mange, but the other two conditions are identified with ease. It is important to use the scraping method and collect mites or eggs if possible.

ELISA assay is considered to be another vital method to test chronic cases. It helps to diagnose IgG antibodies against *Sarcoptes* antigens (Rowe, Whiteley & Carver, 2019). The technique is extremely specific and sensitive. It is an effective diagnostic method, but false positives results can as well be realized. The reason being, there has been some persistence of antibodies after the dog has had several successful treatments in earlier months. Dermatohistopathology is another useful diagnostic technique that helps differentiate *Sarcoptes*

from probable conditions like epidermal hyperplasia, mast cells, eosinophils, and superficial perivascular dermatitis (Becskei et al. 2016). The technique gets to check on the specific areas of the skin where the mites live. When the above techniques have not provided the expected results, therapeutic trials are recommended. A veterinary nurse or surgeon handles this to ensure compliance is maintained. After that, systematic treatments are administered, and accurate dosages are provided.

Treatment options for Sarcoptic Mange

The process of eradicating the sarcoptic mange infection is sometimes tricky. The rate of mating and reproduction of the sarcoptic mange mites is high. The mites mature quickly makes their numbers increase tremendously fast (Romero et al.2016). There are some medications that can effectively help to treat a dog against *Sarcoptes*. Consulting a veterinarian to provide the best treatment can be a wise idea. The treatment procedures vary from medicated baths, injections, and oral medications. In most cases, it is necessary to try more than one treatment technique to acquire optimal results. The topical treatments can be classified into two groups; dips and topicals. The dips or baths are mostly used to help treat *Sarcoptes*. This includes amitraz and lime-sulfur dip. Information on how to use the method needs to be given by the veterinarian to get the right guidelines (Perez et al. 2020). The topicals medication involves applying sprays or oil on the dry skins of a dog. The medication is required to be within every 14-30 days or as per the veterinarian's recommendations. The eradication procedure needs to start by killing the mature mites first. Then, eradicating the larvae should follow before they reproduce and multiply again.

Topicals treatments involved the use of chemical-based injections, pesticides, and anti-parasitic meds. These types of treatment procedures contain neurotoxic ingredients like amitraz, doramectin, and ivermectin (Becskei et al., 2016). The chemicals play the role of slowly killing

the mites. They are required to be sprayed all over the dog's body. The use of these chemicals is known to have some neurological and psychological reactions. Moreover, when the disease is perceived to be severe, wondercide's skin tonic sprays, as well as skin tonic ailments, can be applied. These are among the most successful components to eradicate the mites. The spray and oil are manufactured with neem oil, which is best known to have powerful anti-miticide. In some cases, soothing tonic sprays can be used to calm relief to puppies suffering from the itchiness caused by the disease (Romero et al., 2016).

There is a wide variety of oral medications that can be applied to treat Sarcoptic Mange. The veterinarian may prescribe oral medications, which are in the form of liquid or pills (Rowe, Whiteley & Carver, 2019). These oral medications comprise components like milbemycin and sarolaner. The medications are usually applied 'off label' to help manage the treatment of sarcoptic Mange, which means that the use of the drug has multiple uses other than the one it is approved for, like preventing re-infection cases. After using the medication, the recovery period can take up to about six weeks (Perez et al. 2020). This depends on how the dog reacts to the treatment procedure and what the vet recommended. Once you have realized that your dog was in frequent contact with an infected dog, there is a need to treat it even if it has not shown any symptoms.

Prevention measures towards Sarcoptic Mange

Most are the cases that you will realize that all pets will naturally have mites on their skins. There is no clear explanation as to why one pet will develop Sarcoptic Mange, and another will not. However, some strategies pets' owners must consider to keep the pets' skins healthy and reduce the risk of infections by sarcoptic Mange (Romero et al.2016). There is a need for any dog owner to enhance the health of their dogs by ensuring that they eat healthy and nutritious diets with minimal fillers in the food provided, like grains. As usual, a meat-based diet should be the most

considered as it is the best for the dogs (Becskei et al., 2016). A healthy dog has increased immunity, which helps to reduce the chances of being affected highly by diseases.

When feeding the dogs, it is important to add a spoon or two of apple cider vinegar. Another essential component can be fish oil. These two ingredients are vital in fostering the health of dogs by adding extra nutrients to their meals. For that reason, their bodies and skin remain healthy throughout. Dog owners should make sure their dogs remain clean. Good grooming is necessary, which includes regular brushing and bathing the dogs (Perez et al. 2020). This practice needs to be handled under the conditions and measures provided by the veterinarians. It helps to keep the dogs' skin free from pests at all times. The environment they live in must be clean with a reduced interaction with other dogs in the surrounding neighborhoods. Considering these measures will help control the chances of the dogs from getting into contact with other affected dogs.

A dog owner needs to make sure the pet is living in a stress-free environment. Anxiety is among the things that distract the peace of a dog, rendering its movement to the surrounding and, to some points depressing the animal, making it susceptible to suffering from Mange or any other illness (Becskei et al., 2016). There is a need to keep the dog away from others suspected to be suffering from the disease, which includes avoiding walking with it to public places and parks. Such areas might pose risks of getting or collecting the mites from the infected dogs. There is a need to occasionally spray your dog and its beddings to eliminate any potential infections. In case one of the dogs or puppies is infected, separating it from others is necessary to avoid the spread of the infection to other animals in the homestead.

Conclusion

The Sarcoptic Mange is a challenging disease that has terrible effects on dogs as well as other animals. Dogs with sarcoptic Mange are responsible for transmitting to other healthy ones, especially when they lack treatment. Once a dog owner realizes some of the clinical signs discussed, taking the dog to a veterinary clinic is essential to ensure the disease is treated. The condition should be handled before it worsens by leading to the death of a dog. There is a need to maintain dogs' health at all costs by making sure their beddings are clean and sprayed occasionally. Feeding dogs with healthy foods and observing all precautionary measures can help boost their health.

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