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Article

Trichophytosis in Dogs: Diagnosis, Prophylaxis, Treatment, and Prevention

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Abstract: This article describes the etiology, epizootology, clinical manifestations, diagnostic methods, treatment approaches, and preventive measures of trichophytosis in dogs. Trichophytosis is a contagious fungal skin disease caused by dermatophyte fungi that affects the skin, hair, and nails of animals and can also be transmitted to humans. The article analyzes clinical and laboratory diagnostic methods used for disease detection, modern therapeutic approaches, and the importance of veterinary-sanitary measures. The findings indicate that early detection of the disease, timely isolation of infected animals, effective use of antifungal drugs, and strict adherence to sanitary and hygienic regulations are essential for preventing the spread of trichophytosis and maintaining animal health.

Keywords: Trichophytosis, Dermatophytosis, Trichophyton, Dogs, Diagnosis, Zoonosis

1. Introduction

Trichophytosis is one of the most common fungal skin diseases affecting domestic animals, particularly dogs, and remains an important concern in veterinary medicine because of its zoonotic potential. The disease is caused by dermatophyte fungi of the genus *Trichophyton*, which invade keratinized tissues such as the skin, hair, and nails. Because the infection can be transmitted from animals to humans through direct or indirect contact, trichophytosis represents not only a veterinary problem but also a public health concern.

The prevalence of trichophytosis is influenced by several factors, including age, immune status, environmental hygiene, housing conditions, and animal management practices [1]. Young animals, immunocompromised dogs, and those kept under poor sanitary conditions are more susceptible to infection. The persistence of fungal spores in the environment for extended periods contributes to the rapid spread of the disease in kennels, shelters, and breeding facilities.

Early diagnosis is essential for effective disease control. Clinical examination should be supported by laboratory techniques such as direct microscopic examination, fungal culture, and other mycological diagnostic methods to ensure accurate identification of the causative organism. Timely treatment using appropriate antifungal medications, combined with strict sanitation and isolation measures, significantly reduces disease transmission and improves recovery [2].

The aim of this study is to review the etiology, epidemiology, clinical manifestations, diagnostic methods, prophylactic measures, and prevention strategies for trichophytosis in dogs, while

emphasizing the importance of early diagnosis and comprehensive veterinary management in controlling this zoonotic disease [3], [4].

Literature Review

Ringworm belongs to the group of dermatomycoses and has been known since ancient times. However, dermatophytes were identified as the causative agents of dermatomycoses in the mid-19th century, when the pathogens of trichophytosis, microsporosis, and favus were discovered. Their morphophysiological, virulence, pathogenic, staining, and cultural characteristics were subsequently studied experimentally.

Between 1841 and 1843, A. A. Kazenov identified the causative agent of trichophytosis in human scalp lesions and named it Herpes tonsurans. In 1845, Malmsten named the causative agent Trichophyton, referring to it as a plant fungus. In 1858, the researcher A. Ardi introduced the term trichophytosis into scientific literature [5].

In the late 20th century (1970–1980), under the leadership of Professor A. X. Sarkisov, the highly effective LTF-130 vaccine was developed for both prophylactic and therapeutic use against ringworm in cattle. In Uzbekistan, extensive research on dermatophytosis was conducted by Professor Sh. T. Rasulov, M. P. Parmanov, and researchers A. B. Li and E. Ibragimov at the Department of Epizootology of Samarkand Agricultural Institute. M. P. Parmanov developed the Trikhovis vaccine against ovine trichophytosis [6]. The special culture medium for fungal cultivation invented by R. Saburo in the early 20th century is still widely used today.

2. Methodology

During the former Soviet period, planned application of the LTF-130 vaccine significantly reduced the incidence of ringworm throughout the region, including Uzbekistan. Currently, the disease is mainly recorded in areas where vaccination coverage is insufficient.

Disease Overview

Trichophytosis in dogs is a contagious fungal skin disease caused by dermatophyte fungi of the genus Trichophyton. The disease affects the skin, hair coat, and sometimes the nails. It occurs most frequently in young dogs, immunocompromised animals, or dogs kept under poor husbandry conditions. Trichophytosis is a zoonotic disease, meaning it can be transmitted from infected dogs to humans and other animals.

3. Results and Discussion

Transmission occurs primarily through direct contact with infected animals, contaminated hair, skin debris, grooming equipment, cages, and other fomites. The ability of fungal spores to survive for long periods in the environment contributes to the rapid spread of the disease [7], [8].

The initial clinical sign is the appearance of circular or oval areas of alopecia. The affected skin becomes erythematous, scaly, crusted, and may exhibit mild pruritus. Lesions are most commonly located on the head, ears, neck, limbs, and around the tail. If treatment is delayed, lesions may enlarge and secondary bacterial infections can develop.

Early detection of trichophytosis, isolation of infected dogs, treatment under veterinary supervision, and adherence to sanitary and hygienic measures are essential for disease control. Environmental disinfection using bleach or other suitable disinfectants, proper disinfection of grooming tools, and separation of healthy animals from infected ones constitute the main preventive measures.

Course of the Disease and Clinical Signs

The incubation period of trichophytosis in dogs usually ranges from 7 to 30 days. Disease progression depends on the dog’s age, immune status, housing and feeding conditions, and the virulence of the fungal pathogen. Clinically, trichophytosis occurs in superficial, deep, and atypical (subclinical) forms.

The disease typically begins with the appearance of circular or oval alopecic lesions on the head, ears, muzzle, neck, limbs, and around the tail. The affected skin becomes reddened, scaly, and covered with grayish or whitish crusts. As the disease progresses, lesions may enlarge and coalesce [9]. Mild pruritus may occur, although itching is not always pronounced.

In the superficial form, lesions are confined to the upper layers of the skin and the general condition of the animal remains largely unaffected. In the deep form, inflammation becomes more severe, resulting in pustules, thick crusts, and painful lesions. In the atypical form, clinical signs are minimal and may consist only of localized hair thinning or mild scaling.

If left untreated, lesions may spread over the entire body, secondary bacterial infections may occur, and the treatment period may be prolonged. The disease is generally more severe in immunocompromised dogs. Because trichophytosis is zoonotic, infected dogs represent a source of infection for humans and other animals. Therefore, early diagnosis, isolation of affected animals, and veterinary-supervised treatment are of great importance [10].

Diagnosis

Diagnosis is established using a comprehensive diagnostic approach that includes epizootological data, clinical signs, and mycological examination results.

When trichophytosis is suspected, pathological material is collected by scraping the edge of the lesion, provided the animal has not been treated previously. The sample is placed in a glass container or Petri dish and treated with 10–20% sodium hydroxide (NaOH), then incubated in a thermostat for 30 minutes. Subsequently, the material is mounted on a slide with a drop of 50% glycerol, covered with a coverslip, and examined microscopically at approximately ×400 magnification [11], [12].

For hair examination, about ten affected hairs are placed on a dark background, transferred to a microscope slide, treated with 10–15% alkali solution, and gently heated. Microscopic examination focuses on the distribution of arthrospores.

The collected material may also be cultured on appropriate fungal media, and colony growth is monitored. Under microscopy, thin fungal hyphae and spores are typically visible in skin crusts or infected hairs [13].

Prophylaxis

Strict compliance with veterinary-sanitary and hygienic measures is essential for preventing trichophytosis in dogs. Areas where dogs are housed should be regularly cleaned and disinfected, grooming tools should be stored separately and disinfected, and newly introduced dogs should be quarantined for a specified period.

Animals showing clinical signs should be immediately separated from healthy animals. Adequate and balanced nutrition, improved housing conditions, and measures aimed at strengthening immunity increase resistance to infection [14], [15].

People who have been in contact with infected animals are advised to wash their hands thoroughly and use protective equipment because trichophytosis can be transmitted to humans. In affected facilities, contaminated hair, crusts, and other waste materials should be destroyed, and buildings and equipment should be treated with fungicidal disinfectants recommended by veterinary authorities.

Regular implementation of preventive measures plays a crucial role in preventing the spread of trichophytosis and maintaining animal health.

4. Conclusion

Trichophytosis remains one of the most significant contagious fungal diseases affecting dogs because of its zoonotic nature and its ability to spread rapidly under unfavorable sanitary conditions. The disease primarily affects the skin, hair, and occasionally the nails, causing considerable health problems in animals and posing a potential risk to humans. Accurate diagnosis based on clinical examination and laboratory confirmation is essential for successful treatment and effective disease control. Early detection, prompt isolation of infected animals, and the use of appropriate antifungal

therapy considerably reduce the severity and duration of the disease while preventing further transmission.

Preventive measures, including proper hygiene, routine disinfection of animal housing and equipment, quarantine of newly introduced animals, balanced nutrition, and regular veterinary supervision, play a crucial role in reducing the incidence of trichophytosis. Increasing awareness among pet owners regarding the zoonotic nature of the disease and the importance of timely veterinary intervention further contributes to effective prevention.

In conclusion, an integrated approach combining early diagnosis, effective treatment, strict biosecurity, and comprehensive preventive measures is essential for controlling trichophytosis in dogs, protecting animal welfare, safeguarding public health, and minimizing economic losses associated with the disease.

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