OCCURRENCE OF DERMATOPHYTES IN CAPTIVE WILD RABBITS WITHOUT CLINICAL SIGNS

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ABSTRACT

Dermatophyte or ringworm infection is a superficial skin infection, with veterinary and public health importance. An epidemiological dermatophytosis survey was carried out in captive wild rabbits without clinical signs in Northern of Portugal. Between August and December 2019, 71 hair samples were collected with the Mackenzie toothbrush technique. In this study, dermatophytes were identified from samples of 5 wild rabbits. The overall occurrence of dermatophyte species was 7.0% (95% confidence interval, CI: 2.3% to 15.6%). *Trichophyton mentagrophytes* Complex was the only genus isolated. Considering the paucity of epidemiological reports in this country, these results could make a useful contribution towards the diagnosis and prevention of wild rabbit dermatophytosis. Following the work, it will be important to increase the number of samples and expand the study area.

Key words: wild rabbits, dermatophytes, occurrence, Portugal.

INTRODUCTION

In Portugal, few studies have been organized to investigate ringworm occurrence in meat rabbits (Moreira *et al*., 2012; Mesquita *et al*., 2016) and to the best of our knowledge the occurrence of dermatophytosis in captive wild rabbits has not been investigated in this country. In rabbits, dermatophytosis most often occurs in kits. The most common fungal identified in rabbits with dermatophytosis is *T. mentagrophytes* (Van Rooij *et al*., 2006). In Mediterranean countries, hunting wild rabbits is an activity of great economic importance. The present study was initiated in response to concerns about the prevalence of the disease in captive wild rabbits in North of Portugal in order to discern its economic impact and prioritize the allocation of disease control resources.

MATERIALS AND METHODS

Animals and experimental design

The study was conducted on 71 wild rabbits. The animals lived in rural area where they were allowed to roam freely. Samples were taken from 71 wild rabbits, without any clinical signs in the skin in a period between August and December 2019, in wild rabbit farms in the North of Portugal. For sample collection the Mackenzie toothbrushes technique was used (Moriello, 2001). The sex and age were recorded for each animal.

Microbiological Analyses

Individually human toothbrushes were used for each rabbit. Each toothbrush was longitudinally combed for 1 min over the hair coat of each animal, starting from the head, followed by the neck, dorsum, trunk, ventrum, limbs and tail. After specimen collection, the toothbrushes were placed in new self‐sealing plastic bags and submitted to the Medical Mycology Laboratory of the University of Trás-os-Montes and Alto Douro. The toothbrush was pressed onto the surface of the agar for 1 min.

Cultures were performed on DTM (Liofilchem) (formula per litre: soy peptone 11 g; glucose 10 g; cycloheximide 0.5 g; gentamicin 0.1 g; pH 5.5; phenol red 0.2; agar 15 g). Plates were incubated at 27°C, and examined daily for two weeks. Fungal colonies were identified to species level based on their morphology and microscopic features.

RESULTS AND DISCUSSION

Dermatophyte or ringworm infection is a superficial skin infection, with veterinary and public health importance. An epidemiological dermatophytosis survey was carried out in captive wild rabbits without clinical signs in North of Portugal. In this study, dermatophytes were identified from samples of 5 wild rabbits. Morphology was examined through light microscopic examination. All the studied isolates formed colonies in DTM and Potato Dextrose Agar with a velvety surface and yellowish pigmentation on the reverse. Isolates were identified as species of the *Trichophyton mentagrophytes* Complex based on the production of numerous spherical to pyriform microconidia and multiseptate macroconidia with cigar to club-shaped. The overall occurrence of dermatophyte species was 7.0% (95% confidence interval, CI: 2.3% to 15.6%) (Table 1; Figure1).

Table 1: Characterization of rabbits with positive culture.

Variables	Sex	Age	Days to obtain visible colonies	Number of colonies
Sample number				
7	Male	Adult	12	2
11	Male	Young	12	1
19	Male	Adult	12	1
15	Female	Young	8	2
21	Female	Young	8	1

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This study also showed the diagnostic utility of fungal culture using the toothbrush technique. The isolates in our study were identified as *T. mentagrophytes* Complex on phenotypic examination.

Previous studies showed that the zoophilic dermatophyte *Trichophyton mentagrophytes* Complex was also the most frequent genus isolated from rabbits (Van Rooij *et a*l., 2006; Moreira *et al*., 2012). An understanding of dermatophytosis epidemiology in captive wild rabbits is of public health concerns to reduce the spread of zoophilic fungal infections to humans and to other animals (Mesquita *et al*., 2016).

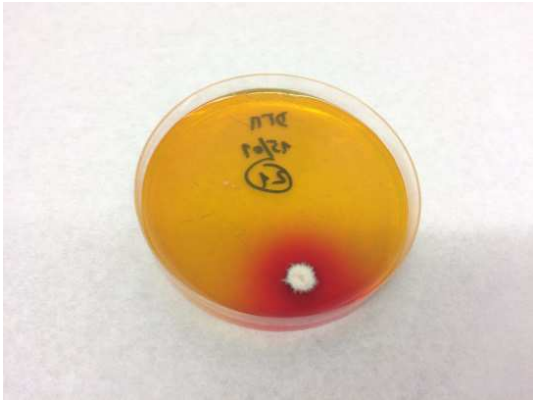

Figure 1: Colony of *Trichophyton mentagrophytes* in DTM

CONCLUSIONS

The results confirm the presence of dermatophytes in asymptomatic wild rabbits and support the need for new strategies and approaches used in the control of dermatophytosis infection in captive wild rabbits.

ACKNOWLEDGEMENTS

This work was funded by the project UIDB/CVT/00772/2020 supported by the Portuguese Science and Technology Foundation (FCT).

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