Isolation of dermatophytes in wild felids from screening centers

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Abstract

The aim of this study was detect the presence of dermatophyte fungi on wild felids from screening centers. Samples were taken from 30 animals, assembled in two groups: “free-ranging” and “transitory captivity”. The dermatophytes (Trichophyton genus), isolated from two felids (6.6%), both of the group “free-ranging”.

Key words: Trichophyton sp., dermatophytes, wild felids.

Dermatophytes are fungi that cause superficial mycoses in animals and humans. While studies have shown that domestic cats (Felis catus) are often asymptomatic carriers of dermatophytes, and thus a significant source of infection this aspect has not been studied in relation to their wild relatives (Bentubo et al., 2006; Brotto et al., 2005).

Dermatophytes are a group of keratinophilic fungi classified in three genera, Microsporum, Trichophyton and Epidermophyton, capable of invading keratinized tissues as nails, hair and corneal extract of humans and animals. These fungi are transmitted by contact with fur and dandruff infected or containing fungal particles, either from animals, environment or fomites (Sidrim et al., 2004). Young animals are most susceptible than adults and therefore asymptomatic adults can be sources of infection for the young and to humans in screening centers (Pereira and Meireles, 2001).

In domestic cats Trichophyton mentagrophytes is the third most common agent causing dermatophytosis, after Microsporum canis and M. gypseum (Scott et al., 1996). In relation to wild felids, few studies describe the isolation and characterization of their dermatophytes. Thus, the prevalence of these fungi genera in wild cats is unknown. Given the considerable zoonotic potential of dermatophytes, it is important to research and identify these fungi at resident and/or transitory microbiota of the fur of wild felids, to determine possible infection sources in unapparent carriers (Bentubo et al., 2006). Therefore, the aim of this study was detect the presence of dermatophyte fungi on the hair and ear canal of free-ranging and transitory confined wild felids, in order to determine the prevalence of dermatophytes on these animals and related it to captivity status.

Samples were taken from 30 animals, felines, of both sexes, adults and young, admitted at Núcleo de Reabilitação de Fauna Silvestre - Centro de Triagem de Animais Silvestres, Universidade Federal de Pelotas, RS (NURFS - CETAS, UFPel) or at Centro de Reabilitação de Animais Silvestres (CRAS - IMAP), Secretaria do Meio Ambiente do Estado do Mato Grosso do Sul. Animal species include pumas (Puma concolor n = 11), geoffroy’s

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cats (*Leopardus Geoffroyi* n = 9), margays (*Leopardus Wiedii* n = 4), ocelots (*Leopardus Pardalis* n = 2), tiger cats (*Leopardus Tigrinus* n = 2), jaguar (*Panthera Onça* n = 1) and jaguarundi (*Puma Yagouaroundi* n = 1). They were divided in two groups: just captured (n = 23) and in transitory captivity (n = 7).

Animals included in the study were submitted to chemical restraint, with the anesthetic protocol employed at each facility. Samples were collected by rubbing sterilized carpet squares on the felids’ skin on dorsum, nuchal and chest area. Material was collected from ear canal of all animals through sterile cotton sticks. These material were sent to laboratory in up to 24 hours, and then seeded by impression on plates containing Sabouraud dextrose agar with chloranfenicol and cycloheximide at 25 °C, with daily observation, until presented well defined pattern colony. To microscopical evaluation a colony’s fragment was stained with lactophenol cotton blue, in order to detect typical fruiting bodies of each species. The material was submitted to culture on potato dextrose agar, with the aim of encourage classic macroconidia growth and confirm the fungal species in the sample.

Dermatophytes were isolated from two felids (6.6%), both of the group “just captured”. The only genus found was *Trichophyton* sp. The first one, a Geoffroy’s cat, was isolated *T. mentagrophytes*. This animal had the same agent isolated from its ear canal. Colony was white to cream with reverse tan and granular texture, characterized microscopically by spiral hyphae, numerous microconidia and rare long macroconidia thin-walled, cigar-shaped with 2-5 celled (Figure 1). The second animal positive to dermatophyte isolation was a jaguar. In this case, a *Trichophyton* sp. was isolated from its hair. On Sabouraud dextrose agar, *Trichophyton* sp. has grown as a flat downy thallus with white edges and a cream-tinted central area. On potato dextrose agar the colony presented numerous microconidia and one single macroconid cigar-shaped with nine celled (Figure 2).

**Figure 1** - *Trichophyton mentagrophytes* colony: spiral hyphae, numerous microconidia and rare long macroconidia thin-walled, cigar-shaped with 2-5 celled.

**Figure 2** - *Trichophyton* sp.: colony presenting numerous microconidia and one single macroconid cigar-shaped with nine celled.
In domestic animals _M. canis_, _M. gypseum_ and _T. mentagrophytes_ are the main species involved in infections (Cavalcanti _et al._, 2003). Among these, _M. canis_ assumes a notable relevance as the most isolated dermatophyte in cats (Gambale _et al._, 1993, Pier and Moriello, 1998, Zaror _et al._, 1986). _M. canis_ can be isolated in up to 88% of apparently healthy cats (Zaror _et al._, 1986); this asymptomatic carrier state of the domestic cat is of utmost importance because animal host reservoirs represent an infection risk for the human population and a public health concern (Costa _et al._, 1994a, Zaror _et al._, 1986).

Although epidemiology of dermatophytosis in wild animals has not been well documented in literature, dermatophytes were isolated by many researchers from different wild species all over the world. In western Australia, _T. mentagrophytes_ was recovered from many domestic and wild animals. A kangaroo was found to be carrying _T. mentagrophytes_ which it transferred to a laboratory employee who developed a skin lesion (McAleer, 1980).

Salebian and Lacaz (1980) recovered the genus _Trichophyton_ from 2.8% of free-ranging wild rodents in Brazil. Knudtson _et al._ (1980) reported a case of infection by _T. mentagrophytes_ in a wild red fox (_Vulpes fulva_) in the USA.

The diagnostic result in animal dermatophytoses obtained by Schmidt (1996) showed that _T. mentagrophytes_ has the highest prevalence rate in small rodents. _Trichophyton mentagrophytes_ has been isolated from hairs of wild boars (_Sus scrofa_) in Italy, although there was no evidence of infection in these boars (Mancianti _et al._, 1997). Dermatophytes were also isolated from the haircoat of a tiger (_Panthera tigris_) (Gierloff and Katic, 1961). Research in dermatophytes in Brazil in one specimen of each of the following wild felids: ocelot (_Felis pardalis_), lion (_Panthera leo_) and tiger (_Panthera tigris_), isolated _M. gypseum_ in the ocelot (Costa _et al._, 1995).

Given the considerable zoontic and zoopathogenic potential of dermatophytes, it is important to research and identify these fungi in the resident and/or transitory microbiota of the haircoat of healthy wild felids, to determine possible infection sources in asymptomatic carriers. With this objective in mind this research sought to detect the presence of dermatophyte fungi on the haircoat of healthy wild felids maintained in captivity.

Both wild felids in our study were young animals, matching the results related by Balda _et al._ (2004) on domestic cats, which more than 65% of animals were younger than 12 months. Both of them were free-ranging animals, which could suggest that dermatophyte isolation is not related to captivity stress. However, the low number of samples from captivity animals (n = 7) in this study seems to acted as an interference factor in this analyses, since captivity condition is associated with stress, which increases opportunistic infections frequency, as dermatophytosis.

Since _Trichophyton_ is a zoophilic dermatophyte, we believe that wild rodents are a possible source of infection to wild felids, because their predation habits. The presence of dermatophytes on the fur of healthy wild felids not only increases the risk of illness but also makes them unapparent carriers, characterizing them as a source of infection for other animals and for human being (Bentubo _et al._, 2006). Understanding this condition is essential in the adoption of prophylactic measures for sanitary maintenance for these animals and the professionals who maintain contact with them.

Due to growing interest in ecology and preservation of wild animals, it has been required the knowledge about the etiology of illness in non-domestic animals, to prevent it transmission to other hosts, such as other animals as well as humans involved in their treatment, handling and/or conservation.

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