

OCCURRENCE OF DERMATOPHYTOSES AMONG STRAY DOGS AND CATS IN THE CITY OF KHARKIV

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Summary. Spreading of zoonoses in big cities of Ukraine and other countries is connected with the existence of certain group of animals which are sensitive to these diseases. It concerns, first of all, stray dogs and cats which might both be infected and carry infectious agents common for animals and humans. Dermatophytoses are one of the most common zoonotic diseases among stray animals. The goal of this work is to monitor the occurrence of dermatophytoses among stray dogs and cats in the city of Kharkiv. We took into account clinical and epizootic data, as well as results of common microscopic and mycological laboratory studies when diagnosing the dermatophytoses in homeless animals.

Studying 723 dogs and 85 cats with clinical signs of skin and fur lesions, we isolated cultures of dermatophytic fungi from 96 dogs (13.3% of animals with skin lesions) and 33 cats (38.8%). The share of pathogenic dermatophytic fungi made 33.4% among dogs with skin and fur lesions and 45.4% among sick cats.

The obtained data proves the prevalence of dermatophytoses among stray dogs in Kharkiv and encourages the need of further improvement of eradication and preventive measures against animal infectious skin diseases.

Keywords: dermatophytoses, infectious agents, stray animals, dogs and cats

Introduction. Spreading of infectious diseases, primarily zoonoses, in big cities of Ukraine and other countries connected with the existence of certain group of animals which are sensitive to these diseases. It concerns, first of all, stray dogs and cats which might both be infected and carry infectious agents common for animals and humans (Capelli et al., 2006; Ponomarenko, Fedorova and Bulavina, 2009; Jittapalpong et al., 2009; Awadallah and Salem, 2015; Ponomarenko, 2017b).

According to veterinary specialists and researchers which carry out monitoring of animal contagious diseases in human settlements in Ukraine, the highest level of infectious and parasitic diseases is registered among homeless (Ponomarenko et al., 2008; Soroka and Dakhno, 2010; Ponomarenko et al., 2013; Korniyushin, Malysko, and Malega, 2013; Ponomarenko, 2017a). It is connected with insufficient control of animals' population, the absence of proper veterinary service for them, namely vaccination against infectious diseases and appropriate antiparasitic treatment and the prevalence of asymptomatic or latent forms of diseases et al.

Dermatophytoses take a special place among skin disorders of small domestic animals. These diseases are the most common mycotic infections in the world (Kovalenko et al., 2017). They do not cause significant mortality but they cause high level of infection both in animals and in humans.

The presence of clinically healthy animals which carry pathogenic dermatophytic fungi is the important epidemiological hazard. Fungi carriers pose a constant

threat of human and animal infection and contaminate environmental objects with dermatophytic spores (Manoyan, Ovchinnikov and Panin, 2012; Kovalenko et al., 2015; Morozova, Severin and Ponomarenko, 2015).

The aim of the study. Relying on the relevance of this issue, the goal of our studies was to monitor the occurrence of dermatophytoses among stray dogs and cats in the city of Kharkiv

Materials and methods. Studies, their analysis and generalization were conducted in 2012–2017 at Municipal Enterprise 'Animal Care Center' as well as at the P. I. Verbytskyi Educational and Research Laboratory of Molecular and Genetic Studies of the Department of Epizootology and Veterinary Management in the Kharkiv State Zooveterinary Academy.

We took into account clinical, epizootic, microscopic and mycological laboratory studies when diagnosing the dermatophytoses. Clinically, we took into account typical lesions on the surface of skin and fur cover both in positive and in doubtful or negative clinical results.

To study cultural and morphological characteristics of isolated cultures, we used selective media, such as Saburo agar, Wort agar, Chapek's agar, meat peptone glycerol and nutrient agar. Seedlings were cultivated in incubator at 28–30 °C throughout 20–30 days. Isolated cultures of dermatophytic fungi were identified using common techniques (Kovalenko et al., 2017; Sutton et al., 1998).

Results. In 2012–2017, we clinically studied 17,138 dogs and 2,820 cats from Municipal Enterprise 'Animal Care Center' (Kharkiv, Ukraine) in frames of

city's program for treatment of stray animals and control of their population. As a result, we detected 723 dogs (4.2% out of all studied animals) and 85 cats (3.0%) with clinical signs of skin and fur lesions (Table 1).

Table 1 — Dermatophytosis morbidity dynamics of stray animals in the city of Kharkiv

Year	Number of studied animals		Number of animals with skin lesions, %		Number of sick animals confirmed, %	
	dogs	cats	dogs	cats	dogs	cats
2012	3,622	217	152 (4.2)	7 (3.2)	24 (15.8)	3 (42.9)
2013	3,580	324	167 (4.7)	12 (3.7)	16 (9.6)	5 (41.7)
2014	3,124	178	123 (3.9)	6 (3.4)	14 (11.4)	2 (33.3)
2015	2,760	237	111 (4.0)	9 (3.8)	21 (18.9)	3 (33.3)
2016	2,138	985	98 (4.6)	27 (2.7)	10 (10.2)	11 (40.7)
2017	1,914	879	72 (3.8)	24 (2.7)	11 (15.3)	9 (37.5)
Total	17,138	2,820	723 (4.2)	85 (3.0)	96 (13.3)	33 (38.8)

As a result of microscopic and mycologic studies of biological samples from these animals, dermatophytosis was laboratory confirmed in 96 dogs, or 13.3% of all animals with skin lesions. Cultures of dermatophytic fungi were isolated from samples from 33 cats (38.8% of animals with lesion of skin surface). The level incidence rate in dogs explicitly valued from 9.6% in 2013 to 18.9% in 2015. Fluctuations in the morbidity rate in cats were less obvious — from 33.3% in 2014–2015 to 42.9% in 2012.

Both pathogenic dermatophytes and mold yeast-like fungi cultures were isolated from stray dogs and cats (Table 2).

Table 2 — Results of cultural and morphological identification of isolated dermatophytic fungi cultures

Culture	Dogs		Cats	
	Total number	%	Total number	%
<i>Microsporum canis</i>	18	18.8	15	45.4
<i>Trichophyton mentagrophytes</i>	14	14.6	—	—
<i>Malassezia pachydermatis</i>	8	8.3	3	9.1
<i>Candida albicans</i>	7	7.3	3	9.1
<i>Alternaria alternata</i>	27	28.1	8	24.2
<i>Aspergillus fumigatus</i>	10	10.4	2	6.1
<i>Mucor</i>	12	12.5	2	6.1
Total	96	100.0	33	100.0

As a result, the share of pathogenic dermatophytic cultures isolated from stray animals was 33.4% from total number of fungal cultures. Significant difference was noted between percentage of *Microsporum canis* cultures isolated from sick dogs (18.8%) and cultures from infected cats (45.4%).

The share of yeast-like fungi isolated from dogs was 15.6%, and the share of similar cultures from cats was 18.2%.

At the same time, the share of mold fungi was 51.0% with 28.1% of *Alternaria alternata* cultures in dogs. In 24.2% of cases *Alternaria alternata* were isolated from cats. The percentage of other mold fungi cultures was two times less — 12.2%.

Conclusions. Studying 723 dogs and 85 cats with clinical signs of skin and fur lesions, we isolated cultures of dermatophytic fungi from 96 dogs (13.3% of animals with skin lesions) and 33 cats (38.8%).

Cultures of pathogenic dermatophytic fungi were isolated in 33.4% of cases when studying dogs with skin and fur lesions and 45.4% among sick cats.

The share of pathogenic dermatophytic fungi made 33.4% among dogs with skin and fur lesions and 45.4% among sick cats.

The obtained data proves the prevalence of dermatophytoses among stray dogs in Kharkiv and encourages the need of further improvement of eradication and preventive measures against animal infectious skin diseases.

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