

CLINICAL AND EPIZOOTIC CHARACTERISTICS OF DERMATOMYCOSIS MANIFESTATION AND THEIR ROLE IN NOSOLOGICAL STRUCTURE OF SKIN DISEASES IN DOGS AND CATS IN KHARKIV

Morozova V. V., Symonenko S. I., Severyn R. V., Golovko V. A.

Kharkiv State Zooveterinary Academy, Kharkiv, Ukraine, e-mail: vetmurzik@i.ua

Summary: The article presents data concerning epizootic situation of dermatomycosis among small domestic animals (n=4280) for the observing period from 2005 to 2015 in two Kharkiv's veterinary clinics. The nosological profile of dermatitis in dogs and cats has been determined and it was presented by 7 factors with prevalence of dermatomycosis (61.4 %). Pet's disease incidence of dermatomycosis depending on age and breed susceptibility to illness have been analyzed. It was paid an attention to the importance of hematologic studies which point to the different skin pathology

Key words: dermatomycosis, dermatomycetes, diagnostics, dogs, cats, skin diseases

Introduction. For the last years skin diseases comprised about 30–70% of total small domestic animals pathology. Epiparasites, infectious agents, hypo- and avitaminosis, metabolism disorders cause the skin affection. One of the leading places belongs to microscopic fungi which can live on animals' skin for a long time or in association with other microorganisms can cause or increase inflammatory processes (Gryazin, 2001; Skrypnyk and Stetsiura, 2004). The biotic potential of various fungi pathogens, especially dermatomycetes, is high and their sources are widespread depending on the epizootic situation (Marchisio et al., 1995).

The results of clinical observations and experimental searches testify that all the aspects of immune system play an important role in pathogenesis of diseases. Discovery of T- and B-lymphocytes leading role in immune, their cell relation to macrophages, the elaboration of immune competent cells give the possibility to assess animal immune state objectively (Gordienko et al., 2007; Sigurgeirsson et al., 2002).

The aim of this work was to characterize nosological profile of dermatitis in dogs and cats.

Materials and methods. A retrospective survey of different skin disease cases registered among dogs (n=1733) and cats (n=1289) in two private veterinary clinics has been submitted to the Department of Epizootology and Veterinary Management (Kharkov State Zooveterinary Academy) from 2005 to 2015.

Clinical features of the disease were studied by clinical inspection of sick animals. The selection of materials for luminescent, microscopic and mycological investigation was performed from a lesion in the hairline, which had emerald — green radiance, or from a lesion in the hairline, and sometimes claws, with a characteristic formation of the skin hairless, sharply bounded circular spots covered with yellow-gray scales.

The biological material for microscopy and culture (on Sabouraud medium) research served as hair and skin scales from the affected areas of the skin of animals not subjected to treatment. The biological material for microscopic examination was taken from the periphery of the hearth by deep scraping scalpel. The test material was covered with cover glass, gently heated over the flame of a spirit lamp until the white rim from the crystals of alkali on the periphery of the drop and were subjected to microscopy using a light microscope.

Results. The analysis of small animals' incidence according to statistic data of clinics showed that 40.5% of the observed animals had skin pathology of various etiologies. Nosological structure of dermatitis in dogs and cats has been covered and presented by 7 factors among which dermatomycosis dominated. They have been found in 61.4% of animals with skin lesion (Fig. 1).

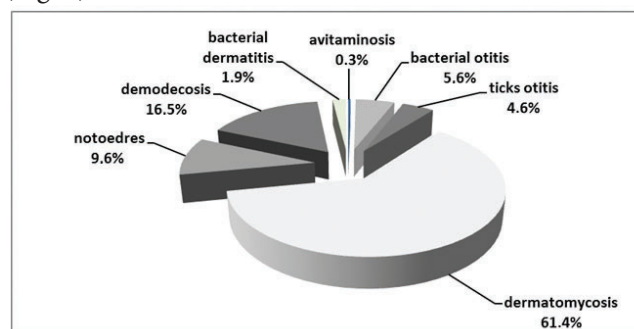


Figure 1. Etiological structure of dermatitis in carnivores

About 30.8—35.7% of dogs and cats out of the total amount of sick animals suffered annually from dermatomycosis in the observational period that has been defined during epizootic situation searching. There have been defined three animal groups according to the age peculiarities (Table 1).

Table 1 – Pet’s incidence of dermatomycosis depending on the age

Age groups	Dogs			Cats		
	Total	Number of sick animals		Total	Number of sick animals	
		n	%		n	%
Young animals (< 6 months)	560	128	22.9	301	93	30.8
Adult animals (from 6 months to 7 years)	1459	437	29.9	1209	432	35.7
> 7 years	386	108	28.0	365	127	34.7
Total	2405	637	26.5	1875	652	34.8

The first group consisted of kittens and puppies from birth to 6 months age. Adult animals were united in the second group at the age from 6 months to 7 years. Animals of the third group were 7 years older. Studying breed susceptibility to dermatomycosis among cats authentic differences have not been found. Diseases have been recorded both in spread and rare cat breeds. Dermatomycosis has been found in 18 breeds of dogs out of 106 searched (Table 2). High incidence of disease has been recorded in French bulldogs, dachshunds and in nondescript dogs. Increased number of animals from May to August and decreased from September have been analyzed as annual dynamics of dermatomycosis occurrence in summer season. The maximum number of diseased dogs have been defined in August (20%) and cats in October (15%). Dermatomycosis manifestation in small animals is various. Acute and chronic cases of disease and also superficial, follicular, atypical, latent forms have been marked in observation period. Single and numerous hairless areas located on separate body parts such as muzzle, paws, back and sides have been noticed during dogs’ examination. Single areas sometimes were mixed with the rest ones forming the complete surface of lesion.

Table 2 – Dogs’ incidence of dermatomycosis depending on the breed

Breed	Total	Number of dermatomycosis cases	
		n	%
Bulldog	125	32	25.6
Airedale Terrier	124	25	20.1
Chow Chow	145	29	20.0

Dachshund	71	15	21.1
Spaniel	144	18	12.5
American Staffordshire Terrier	360	39	10.8
Dog	67	17	25.3
German shepherd	98	12	12.2
Pinscher	45	13	28.8
Rottweiler	61	17	27.8
Doberman	34	16	47.5
Boxer	78	16	20.5
Central Asian Shepherd Dog	147	16	10.8
Pekingese	59	15	25.4
Poodle	87	17	19.5
The Caucasian Shepherd Dog	29	9	31.1
Toy Terrier	40	4	10.0
Outbreed	139	16	11.5
Total	1853	326	17.6

Separate moist parts have been noticed in dogs with thick hair covering (Chow Chow, German Shepherds, Caucasian Shepherd Dogs, nondescript dogs, etc.) and with well-developed subcutaneous layer (Rottweiler

Dogs, American Bulldogs). In dogs with short coarse hair covering (Dachshund, American Staffordshire Terrier, French Bulldog, etc.) the hairless centers of infection with flux skin located on the back, in groin areas. Inflammatory reactions of various stages: skin irritation, itching, peels formation have been observed. During latent form of disease in dogs there have been diffusive hair dropping and sometimes dandruff.

Cats had non-symptomatic disease manifestation in form of long time fall-off. Hairless cats of rare breeds suffered from dermatomycosis in form of small separate centers of infection with irregular shapes with slight skin peeling on the distal areas and reddening in the central areas located on various body parts. Factors influencing dermatomycosis appearance in domestic animals have been found in the result of conducted investigation. Animal increase, crowded animal keeping, migration of infected animals from other regions, non-sanitary animal keeping and out-doors keeping influence dermatomycosis cases. Lack of movement, non-balanced ration in vitamins and mineral substances, inbreeding, groundless taking of antibacterial, vitamin and other preparations cause the decrease of skin protection functions.

In some cases the lack of efficient treatment has been noticed as lingering illness and complicated pathology. Dislocation of neutrophil nucleus to the left position, an increase of lymphocytes amount in 57.7%, basophils and eosinophils in 7.6% have been found during hematologic search of most examined dogs. These indices may tell us about susceptible pathology to skin diseases. Total urine analysis showed changes in mineral, protein and

fat metabolism. Proteinuria has been noticed in 30% of dogs and 45% of cats, the presence of bile pigments (bilirubin, urobilinogen) in 86% of dogs and 85% of cats. The glucose presence in urine in 5% of dogs and in 2% of cats testified about pancreas disorders and the purina presence in 63% of dogs and 31% of cats testified about excretory system disorders.

Conclusions. Using data from two Kharkov's veterinary clinics during 2005-2015 the incidences of skin diseases in dogs and cats were registered in 40.5%. Ringworm in cats often manifest as asymptomatic disease in the form of a prolonged ecdysis. In dogs with a thick coat (Chow-Chow, German, Caucasian Shepherd Dog, outbreed, etc.), and also with well-developed subcutaneous tissue (Rottweilers, American Bulldogs, Shar Peis) has often noted the ringworm, as limited moist areas. In dogs with short hard hair (Dachshund, American Staffordshire Terrier, French Bulldog, Great Dane, etc.) have noted an inflammatory response of varying severity; itching from easy to exhausting, scratching, formation of crusts. Lack of movement, non-balanced ration in vitamins and mineral substances, inbreeding, groundless taking of antibacterial, vitamin and other preparations cause the decrease of skin protection functions. Dermatitis, which are treated with difficulty, are the result of functional disorders of excretory system, digestive system and also glands of internal excretion which weaken animal organism and destroy processes of epidermis regeneration. All above mentioned make favorable conditions for existence of microscopic fungi.

References

- Gordienko, L. N. Nikitushkina, N. A. Selivanova, D. M. and Vazhenina, E. G. (2007) 'Superficial mycosis of small animals: their etiology and spread' [Poverkhnostnye mikozy melkikh domashnikh zhivotnykh: ikh etiologiya i rasprostraneniye], *Veterinary Pathology [Veterinarnaya patologiya]*, 2(21), pp. 143–145. Available at: <http://elibrary.ru/download/22178017.pdf> [in Russian].
- Gryazin, V. N. (2001) 'Etiological aspects of dermatitis in dogs and cats in Novosibirsk' [Etiologicheskie aspekty dermatitov sobak i koshek v Novosibirske], *Actual questions of veterinary: Proceeding of research and practice conference of the faculty of veterinary medicine of Novosibirsk State Agrarian University [Aktual'nye voprosy veterinarii: Materialy nauchno-prakticheskoy konferentsii fakul'teta veterinarnoy meditsiny NGAU]*. Novosibirsk, pp. 109–110. Available at: <http://nsau.edu.ru/images/vetfac/images/ebooks/pages/2001/s109.htm>. [in Russian].
- Marchisio, V. F., Gallo, M. G., Tullio, V., Nepote, S., Piscozzi, A. and Cassinelli, C. (1995) 'Dermatophytes from cases of skin disease in cats and dogs in Turin, Italy', *Mycoses*, 38(5–6), pp. 239–244. doi: 10.1111/j.1439-0507.1995.tb00059.x.
- Sigurgeirsson, B., Paul, C., Curran, D. and Evans, E. G. V. (2002) 'Prognostic factors of mycological cure following treatment of onychomycosis with oral antifungal agents', *British Journal of Dermatology*, 147(6), pp. 1241–1243. doi: 10.1046/j.1365-2133.2002.05035.x.
- Skrypnyk, V. G. and Stetsiura, L. G. (2004) 'Problems of small animals' dermatomycosis' [Problemy dermatomikoziv dribnykh domashnikh tvaryn], *Proceeding of II International Congress of specialists in veterinary medicine [Materialy II mizhnarodnoho konhresu spetsialistiv veterynarnoi medytsyny]*. Kyiv, pp. 7–8. [in Ukrainian].