UDC 636: 619 *DOI 10.52578/2305-9397-2021-1-2-77-81*

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HELMINTHOFAUNA OF THE GASTROINTESTINAL TRACT OF ANIMALS FROM THE *FELIS CATI DOMESTICUS* FAMILY OF THE URALSK CITY

Abstract

The relevance of the problem of intestinal helminth infections of domestic carnivores is due to the widespread infestation in animals and humans.

Helminths of domestic carnivores, cats in particular, have long been the subject of special interest as pathogens of human and domestic productive animals.

With such a large number of cats, in addition, many of them are neglected, the problem of environmental pollution by feces of these animals in urban areas is becoming increasingly acute.

The cat has been living next to humans for about 6,000 years. Currently, there are domestic, stray, feral and true feral cats. Stray cats find shelter in attics and basements of houses, feed themselves and their numbers are constantly increasing.

Some stray animals head for the woods, especially in rural areas, become feral and embittered. Domestic cats, on the other hand, become the most tense factors of contamination of infestation elements in the home, yards and public places.

To date, quite an extensive list of literature on helminth infestations of domestic carnivores has been accumulated. However, when analyzing the literature data it was found that so far fauna and ecology of helminths of domestic carnivorous animals in the conditions of Uralsk are still insufficiently investigated.

The aim of the work was to find out the species composition of helminths, to reveal conditions that facilitate the circulation of pathogens of the main invasive diseases of domestic carnivorous animals in urban conditions in the city of Uralsk, to determine the role of cats in the formation of helminth infections. Urban cats, according to our own research, are infested with the following helminth species: *Opisthorchis felineus, Dipylidium caninum, T. mistax, Toxascaris leonina, Uncinaria stenocephalus.*

Keywords*: Helminthiasis, carnivores, infestation, parasites, ecology, cats, diagnosis*.

Introduction. For many years, the infection of domestic or stray cats with worms in urban conditions has been of interest to both physicians and veterinarians.

A cat has been living next to humans for about 6 thousand years. Nowadays there are domestic cats, stray cats, feral cats and real feral cats. Stray cats find shelter in attics and basements of houses, feed on their own and their number is constantly growing.

Cats that live freely in cities are hardy animals with high resistance to pathogens.

There are cats that leave the city limits in summer, and are forced to return to abandoned premises in winter. The diet of such cats includes various rodents, small birds, amphibians, reptiles, fish, insects, molluscs and human food debris. All these animal organisms are intermediate, additional or reservoir hosts of various helminths (opisthorchus, metorchus, pseudamphist, mesocestoid, diphyllobothria, hydatiger).

Knowledge of the species composition of helminths in cats, the study of the spread of helminthiases, the extensiveness and intensity of invasion, is necessary in the knowledge of the

epizootology of helminthiases in domestic carnivores and the epidemiology of invasive diseases in the city. This will help to more correctly and effectively carry out preventive and therapeutic measures against invasions.

Affection of carnivores with imaginal forms of alveococci, dipilidia and roundworm is an indicator of the sanitary state of the economy, village, city.

The higher the level of sanitary culture of the population of a particular settlement, the less carnivores affected by the above helminthiases.

Echinococci, alveococci, opisthorchias, hookworms and toxascarids cause severe, sometimes fatal diseases [1,2].

Man has historically been in close contact with cats and shares the same habitat with them. For these reasons, the study of the helminth fauna of small domestic and stray animals is an urgent problem.

Research objectives. To reveal the species diversity and structure of the helminth fauna of cats promoting the circulation of pathogens of the main invasive diseases in urban conditions.

Materials and research methods. Scientific, production and experimental research was carried out during 2018-2020 on the basis of the Higher School of Veterinary Medicine and Biosafety of Zhangir Khan WKATU.

The studies used postmortem research methods (complete and incomplete helminthological opening of the gastrointestinal tract) and vital (diagnostic deworming with drontal and polyvercan with complete emptying of the gastrointestinal tract of animals from the contents).

The species of helminths was established using the identifier: «Atlas of the most common helminths of farm animals» according to V.F. Kapustin (1953).

Research results and discussion. More than 35 cats for various household purposes were subjected to research.

The total infection of the studied animal populations is presented in Table 1.

Currently, there is a stable population of domestic carnivores in the city: cats (Felis cati domesticus).

The population of urban cats at this time is represented by the following categories: A - domestic cats, with minimal contact with the external environment; B - semi-free cats living in apartments, and more often in private houses; C - domestic cats exported to the countryside; D - stray or stray cats living in basements, etc.

All categories of cats are characterized by different diets and, therefore, different levels of immune system tension.

In epidemiological terms, categories B and C are especially important. All categories of carnivores living in the city can be infested to varying degrees by one or another type of helminth.

Table 1 - The total infection of the studied animal populations by category

Type of helminths	Post morbi				In vivo			
	E.I. (%)				E.I. (%)			
	A	B	C	D	A	B	C	D
Echinococcus granulosus	-	-	-	-	-	-	-	-
Opisthorchis felineus	18,2	10,5	57,7	14,3	30,3	15,8	66,7	-
Dipylidium caninum	14,28	43,75	26,66	75,0	28,12	43,24	60,0	-
Toxascaris leonina	7,3	24,4	32,2	22,2	16,6	42,85	18,2	-
Toxocara canis	-	-	-	-	-	-	-	-
Toxocara mistax	46,3	42,4	16,1	55,6	24,4	48,7	36,3	-
Uncinaria stenocephala	-	-	-	11,1	-	7,1	8,5	-

Based on the research carried out, we can assess the epizootic situation in the city, in terms of the main diseases caused by the detected types of helminths.

Opisthorchis felineus (Rivolta, 1884).

Opisthorchis felineus is most commonly reported in cats with E.I. 41.0% post morbi, 32.4% in vivo with I.I. parasites 3-90 copies.

According to the results of postmortem examination, opisthorchiasis is most often recorded in domestic cats exported to the countryside, E.I. is 57.7%, and in this category the maximum number of parasite specimens is noted, equal to 3-110 specimens.

These data are confirmed by lifetime studies. Semi-free cats (mainly of the private sector) are the least susceptible to infection (in general E.I. - 10.5%), but at the same time there is a high survival rate of helminths - on average I.I. is equal to 2-64 copies.

Thus, opisthorchiasis is most common in 3 categories, namely among domestic cats, cats exported to the countryside and stray cats.

Dipylidium caninum (L., 1758).

The leading place in the spread of dipylidiosis belongs to the population of domestic cats (E.I. 6.4% with I.I. 1-42 specimens), according to intravital studies (E.I. 5.58%). All categories of cats are infected with dipylidiosis to varying degrees.

The highest rates of invasion were found in stray and semi-free cats, respectively 75.0% and 43.75% (43.24% in category B and 60.0% in category C in vivo).

Toxascaris leonina (Linstow, 1902).

In carnivores of Uralsk, a rather high incidence of toxascariasis is recorded, 34.2% post morbi and 16.0% in vivo. In the category of domestic cats, toxascariasis is the least common - E.I. 7.3% post morbi and 16.6% in vivo, but the intensity of invasion is the highest - 5-16 specimens.

Toxocara mistax (Zeder, 1905).

According to the results of postmortem diagnosis, toxocariasis among cats is widespread by 40.1% with an average intensity of invasion of 6.4 specimens; during life, it occurs in 36.4% of the studied animals.

According to the results of in vivo diagnostics, toxocariasis is widespread in cats of semi-free keeping (category B) with an extensiveness of invasion - 48.7%. And according to the results of postmortem autopsy, the maximum indicator of the extent of invasion is observed in stray cats - 55.6%. The intensity of infestation by helminths is almost the same in all categories - from 5.8 to 6.7 specimens.

Uncinaria stenocephala (Railliet, 1854).

In carnivores, uncinariosis in the city occurs with an extensiveness of invasion of 11.1% post morbi and 8.5% in vivo. By intravital research methods, invasion occurs in categories B and C to the same extent - 7.1% and 8.5%. But domestic cats (A) do not take part at all in the epizootic process of uncinariosis (Figure 1).

Figure 1 - *Uncinaria stenocephala (Railliet, 1854).*

Conclusion. Thus, the cats of the city of Uralsk, based on the results of our research, are infested with the following types of helminths: Opisthorchis felineus, Dipylidium caninum, T.mistax, Toxascaris leonina, Uncinaria stenocephalus.

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ТҮЙІН

Үйдегі етқоректілердің ішек гельминтоздарымен күресу мәселесінің өзектілігі жануарлар мен адамдарда инвазияның кең таралуына байланысты.

Үйдегі етқоректілердің гельминттері, атап айтқанда мысықтар, бұрыннан бері ерекше қызығушылық тудырады - адам мен үй жануарларының қоздырғыштары ретінде.

Мысықтардың көптігімен, сонымен қатар олардың көпшілігі қараусыз, қалалық жағдайда осы жануарлардың нәжісімен қоршаған ортаны ластау проблемасы барған сайын өткір бола түсуде. Мысық адамның жанында шамамен 6 мың жыл өмір сүреді. Қазіргі уақытта үй, қаңғыбас, жабайы және нағыз жабайы мысықтар бар. Қаңғыбас мысықтар үйлердің шатырлары мен жертөлелерінен баспана табады, өздігінен тамақтанады және олардың саны үнемі өсіп келеді. Үйсіз жануарлардың бір бөлігі ормандарға жіберіледі, әсіресе ауылдық жерлерде, жабайы және ашуланшақ болады. Үйдегі мысықтар үйдегі, аулалардағы және қоғамдық орындардағы инвазиялық элементтердің ластануының ең шиеленіскен факторларына айналады.

Бүгінгі таңда үй жануарларының гельминтоздары туралы әдебиеттердің кең тізімі жинақталды. Алайда, әдеби деректерді талдау кезінде Орал қаласының жағдайында үй етқоректі жануарлар гельминттерінің фаунасы мен экологиясы әлі де жеткілікті зерттелмеген екені белгілі болды.

Жұмыстың мақсаты Гельминттердің түрлік құрамын анықтау, Орал қаласы бойынша қалалық ұстау жағдайында үй етқоректі жануарлардың негізгі инвазиялық ауруларының қоздырғыштарының айналымына ықпал ететін жағдайларды анықтау, гельминтоздардың қалыптасуындағы мысықтардың рөлін анықтау болды. Қалалық мысықтар, өз зерттеулеріне сәйкес,гельминттердің келесі түрлеріне инвазия жасайды: *Opisthorchis felineus, Dipylidium caninum, T. mistax, Toxascaris leonina, Uncinaria stenocephalus.*

РЕЗЮМЕ

Актуальность проблемы борьбы с кишечными гельминтозами домашних плотоядных обуславливается широким распространением инвазии у животных и человека.

Гельминты домашних плотоядных в частности кошек, издавна являются объектом особого интереса - как возбудители болезней человека и домашних продуктивных животных.

При такой большой численности кошек, к тому же многие из них безнадзорны, проблема загрязнения окружающей среды фекалиями этих животных в городских условиях становится все более острой.

Кошка живет рядом с человеком уже около 6 тыс. лет. В настоящее время существуют домашние, бродячие, одичалые и настоящие дикие кошки. Бродячие кошки находят приют на чердаках и в подвалах домов, питаются самостоятельно и их число постоянно растет. Часть бездомных животных направляются в леса, особенно в сельской местности, дичают и становятся озлобленными. Домашние же кошки становятся наиболее напряженными факторами контаминации инвазионных элементов в доме, дворах и общественных местах.

На сегодняшний день накопился довольно обширный перечень литературы по гельминтозам домашних плотоядных животных. Однако при анализе литературных данных выяснилось, что до настоящего времени остаются недостаточно исследованными фауна и экология гельминтов домашних плотоядных животных в условиях города Уральска.