Advances in Biology & Earth Sciences
Vol.9, No.2, 2024, pp.273-277
https://doi.org/10.62476/abes9273

IDENTIFICATION OF HELMINTHS OF DOMESTIC CARNIVORES IN AZERBAIJAN AND THE ROLE OF INTERMEDIATE HOSTS IN THEIR SPREAD

R.Sh. Ibrahimova*

Institute of Zoology, Ministry of Science and Education, Baku, Azerbaijan

Abstract. In the formation of helminth fauna, the formation of a high diversity of species, in the circulation of helminths between humans and ruminant domestic animals in nature and in their infection, in the completion of the development stages of biohelminths and their invasion and in the transfer of dangerous helminths from one area to another, their intermediate hosts have a great role. When determining the role of intermediate hosts in the spread of helminths of domestic carnivores, it was found that the intermediate hosts of 12 species of helminths are insects, 7 species are ruminants, 16 species are rodents, 5 species are reptiles and 3 species are earthworms. During the study, it was found that rodents were infected with cysticercoids of the mentioned helminths in 49.3%, reptiles with cysticercoids, procercoids and plerocercoids in 34.7%, snails in 24.7% and insects in 37.3%. Among the intermediate hosts, rodents prevail over other intermediate hosts with 16 species and infection rate of 49.3%. It comes from the ethology of rodents. The scientific-research work carried out in this direction has important theoretical and practical importance. The main direction in the fight against intermediate hosts is to break the chain between transmissible diseases and the agent that transmits them.

Keywords: *Stray dogs, domestic cats, helminth, insects, rodents, freshwater snails, bioecology*.

****Corresponding Author:*** *R.Sh. Ibrahimova, Institute of Zoology, Ministry of Science and Education, Baku, Azerbaijan, e-mail: ibrahimova_reyhan@bk.ru*

Received: *3 June 2024;* ***Accepted:*** *26 July 2024;* ***Published:*** *2 August 2024.*

1. Introduction

Domestic carnivores (stray dogs and cats) play an important role in the spread of dangerous helminths in nature, among pets and people. Since these animals have the characteristic of not depending on environmental conditions, they are in nature in all seasons of the year, polluting the environment with the eggs of dangerous helminths in their excreta, from an ecological point of view, infecting ruminant domestic animals and humans, becoming epizootological and epidemiological important in the ecosystem (Ibrahimova, 2016; Sadigov *et al*., 2004).

Domestic carnivores are the main host of dangerous helminths, as well as their carriers and spreaders. These animals are the main source of infection in maintaining the invasion and are more dangerous than other animals in synanthropic foci.

However, intermediate hosts of dangerous helminths also play a crucial role in spreading and circulating in nature, infecting domestic animals and humans. Thus, in

How to cite (APA):
Ibrahimova, R.Sh. (2024). Identification of helminths of domestic carnivores in Azerbaijan and the role of intermediate hosts in their spread. *Advances in Biology & Earth Sciences, 9*(2), 273-277 https://doi.org/10.62476/abes9273

addition to the main host of helminths in a certain area, the presence of intermediate hosts (ruminant domestic animals, insects, rodents, small reptiles, freshwater and land snails, earthworms) is also necessary for their development and spread.

Intermediate hosts are primarily the main food of domesticated carnivores and play an important role in the formation of the helminth fauna, in the creation of species diversity of helminths, in the circulation of helminths between humans and domestic ruminants in nature, in the completion of the development stages of biohelminths, in the transfer of dangerous helminths from one area to another and in the creation of parasitic foci (Yolchuev *et al*., 2006; 2010; Fataliev *et al*., 2009; Ibrahimova, 2017).

The scientific-research work carried out in this direction is of great theoretical and practical importance.

Taking these into account, it was considered appropriate to determine the role of various types of intermediate hosts in the spread of dangerous helminths in the ecosystem and prepare measures to combat them.

2. Material and methodology

In order to determine the role of intermediate hosts, dog and cat fleas, insects and freshwater snails collected during the period of 2009-2023 were examined by the compressor method and various species of rodents and reptiles were examined by complete helminthological autopsy (Voskresensky, 1929; Skrjabin, 1928).

Of the detected helminths, trematodes, cestodes and acanthocephals were fixed in 70% alcohol, while nematodes were fixed in 4% formalin.

Permanent preparations are prepared using the staining method for the determination of trematodes, cestodes and acanthocephals. Temporary preparations are prepared from nematodes in a mixture of lactic acid and glycerin (1:1).

Both permanent and temporary preparations and biometric measurements were viewed under MBI-6 and 20 x 40 magnification Olympus microscopes and assigned to species based on appointment books.

3. Conclusions and discussion

In the research conducted in Azerbaijan, the role of intermediate hosts in 51 species of helminths found in domestic carnivores was determined.

The following helminth species were recorded: 7 species (*T.hydatigena, T.ovis, T.parenchimatosa, T.cervi, T.krabbei, M.multiceps, E.granulosus*) in domestic carnivores that feed on infected internal organs of domestic ruminants, which are the intermediate hosts, released into the environment; 12 species (*D.caninum, M.catulinus, G.pulchrum, S.rytipleurites, S.arctica, Sp.lupi, P.praeputiale, P.sibirica, R.affi-yoluxmnis, R.cahirensis, A.strongylina, D.repens)* in domestic carnivores that feed on or come into contact with various species of infected insects; 13 species (*J.rossicum, T.la-ticollis, T.crassiceps, T.pisiformis, T.polyacantha, T.solium (larvae), H.taeniaeformis, H.krepkogorski, A.multilocularis, M.lineatus, M.corti, M.petrovi, Tr.spiralis*) in domes-tic carnivores that feed on various species of infected rodents; 5 species (*S.erinacei-euro-pei, D.nolleri, D.skrjabini, J.echinorhynchoides, J.pasgualei*) in domestic carnivores that feed on various species of reptiles; 7 species (*A.alata, E.melis, Pl.elegans, E.perfoliatus, Ph.cordatum, P.fausti, Cr.lingua)* in animals that accidentally swallowed infected fresh-

water snails with food; 3 species *(G.vulpis, T.brevior, A.vasorum)* in animals that swallowed infected land snails with water; 3 species (*C.plica, C.putorii, Th.aerophilus*) when animals swallowed rain worms.

During the study, it was found that rodents were infected with cysticercoids of the mentioned helminths in 49.3%, reptiles with cysticercoids, procercoids and plerocercoids in 34.7%, snails in 24.7% and insects in 37.3%.

Taking into account that the infection of animals with helminths is correlated with the composition of its food, stray dogs and cats were collected from different feeding places (Yolchuev *et al*., 2014).

Helminth infestations of stray dogs and cats obtained from different feeding sites (slaughterhouses, aquatic habitats, ponds, rural and urban areas) varied.

This is due to the fact that they feed on different types of intermediate hosts in different feeding places.

From the detected helminths, it was determined that the composition of the food of stray dogs and cats is mainly rodents (Diagram 1).

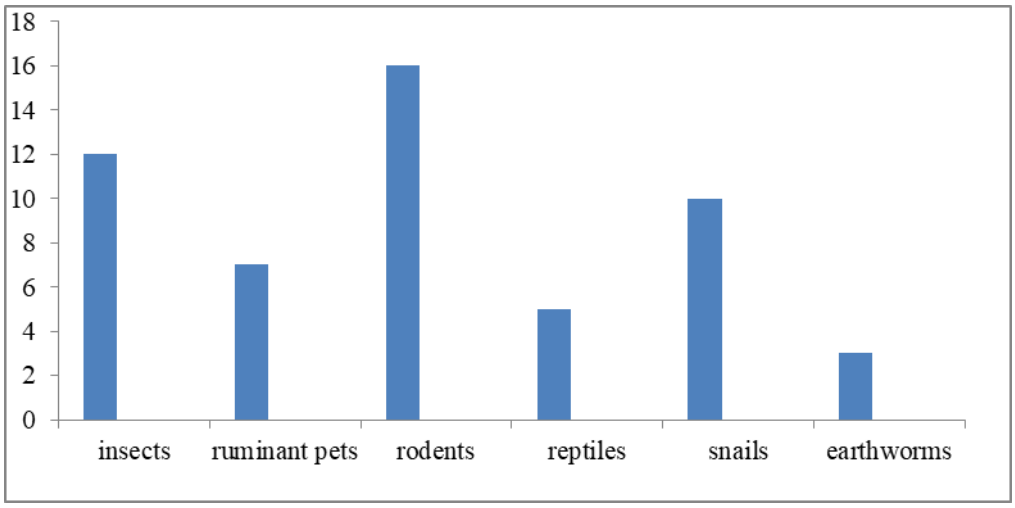

Diagram 1. Intermediate hosts with a role in the spread of helminths

As can be seen from the diagram, the intermediate hosts of 12 species of helminths found in domestic carnivores are insects, 7 species are domestic ruminants, 16 species are rodents, 5 species are reptiles and 3 species are earthworms. Among the intermediate hosts, rodents prevail over other intermediate hosts with 16 species and infection rate of 49.3%. This is due to the ethology (lifestyle) of rodents (Aslanova, 2016).

As can be seen from the table, 15 species of intermediate host rodents were recorded in stray dogs and 9 species were recorded in domestic cats.

As a result of the conducted studies, when determining the role of intermediate hosts, it became clear that the participation of intermediate hosts in the spread of helminths is important and they play a decisive role:

– If there are no intermediate hosts, the infection of domestic carnivores with helminthosis agents cannot occur, the stage of development of biohelminths from eggs to adults will not be completed and invasion will not occur;

– In nature, the circulation chain between humans and domestic animals is broken;

– The parasite-host relationship is disturbed.

Table 1. Rodents as intermediate hosts of detected helminths
(based on personal material and literature data)

The name of helminths	Stray dogs	Domestic cats	Intermediate hosts
Cestodes			
J.rossicum Skrjabin	+	+	
Taenia hydatigena Pallas	+	+	i/h. In the abdominal cavity of various types of ungulates, cysts (larval stage), rodents, human
T.solium (larvae) Linnaeus	-	+	Main host human. i.h: pig, gray house rabbit, rodents
T. crassiceps Zeder	+	+	Mouselike rodents, insectivores, gray rabbit
T.laticollis Rudolphi	+	+	White mice
T.pisiformis Bloch	+	+	Hare, rodents
Hydatigera taeniaeformis Batsch	+	+	Different types of rodents, insectivores
H.krepkogorski Schulz et Landa	+	-	Likeraabits, rodents
Alveococcus multilocularis Leuckart	+	-	Rodents
Echinococcus granulosus Batsh	+		Ungulate, rodents
Tetratirotaenia polyacantha Leuckart	+	-	Rodents
Mesocestoides lineatus Goeze	+	+	Orbatid mites, additional hosts: mouselike rodents, reptiles
M. corti Hoeppli	+	-	Rodents
M.petrowi Sadychov	+	-	Rodents
Acanthocephals			
Macracanthorhynchus catulinus Kostylew	+	-	Beetles, rez: insectivores, rodents, reptiles
Nematodes			
Trichinella spiralis Owen	+	+	Def. h: pig, rat; fak: mammals, rodents, insectivores, human
Total: 16	**15**	**9**	

Thus, since the presence of intermediate hosts promotes the infection of humans and ruminant domestic animals with helminths of domesticated carnivores, the role of intermediate hosts, which creates a connection between the natural source and the synanthropic source in the “pathways of infection” and is the main source of the transmission of invasive diseases to synanthropic sources, has been precisely determined and their spread and appropriate preventive measures should be developed against its increase.

The main direction in the fight against intermediate hosts is to break the chain between transmissible diseases and the agent that transmits them.

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