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ECOLOGICAL AND EPIZOOTOLOGICAL FEATURES OF HELMINTHIASIS OF DOMESTIC GALLIFORMES IN NORTH-EASTERN UZBEKISTAN

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Annotation

The article presents scientific information on the ecological and epizootological characteristics of domestic chicken helminthiases in North-Eastern Uzbekistan, as well as the diseases of raetiniosis, echinoleposis and choanotheniosis of domestic chickens, guinea fowl and turkeys.

Key words: *Northeast, raetiniasis, echinoleposis, choanotheniosis, domestic chickens, chicken, turkey, helminth, quail, ectoparasite, endoparasite.*

Introduction. The bird fauna of Uzbekistan includes representatives of the Galliformes order - inhabitants of lowland and mountain ecoystems. Galliformes are composed of wild and domestic species, which are common in almost all regions of the republic and play an important role in natural processes and in human life. Chickens, turkeys, guinea fowl and quails bred in different types of farms serve as sources of dietary products that are at risk of infection by numerous pathogens, which include ecto- and endoparasites. Therefore, assessment of the current state of the parasitic fauna and the ecology of the dominant species and groups of ecto- and endoparasites of galliform birds, and improvement of methods for the prevention of a complex of parasitic diseases acquire important scientific and practical significance.

Materials and methods. The material for the studies was collected in 2020-2023 in three regions of Uzbekistan –north-east (Tashkent, Syrdarya and Jizzah Provinces). This work is based on parasites found by the authors in 927 individuals of domestic and wild Galliformes. Standard methods were used to collect and treat helminths [1]. To identify helminth species we used various guidelines by Uzbek and foreign researchers. Species were identified at the laboratory for general parasitology at the Institute of Zoology, Academy of Sciences of Uzbekistan, using modern instruments, including a CK2-TR inverted microscope (Olympus, Japan), a LOMO microscope and an ML-2200 binocular microscope (Olympus, Japan).

Results and discussion. The world pays great attention to the study of the species diversity of bird parasites, including galliformes, elucidation of the biological and ecological characteristics of cestodes, trematodes, nematodes and ectoparasites, as well as the development of effective methods and means for the prevention of parasitic diseases of domestic wild galliformes. The parasites are characterized by extremely rich species diversity, widespread among birds in natural and urban areas, and they cause serious diseases in domestic and commercial galliformes.

In this regard, determining the modern fauna of parasites, elucidating the distribution features, ecology of the dominant species of parasites in domestic and wild Galliformes and developing effective methods and means of preventing a complex of parasitic diseases is in demand from the point of view of science and practice. Domestic chickens (chicken, turkey, guinea fowl) are bred in various farms in

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Tashkent, Syrdarya and Jizzakh regions to obtain dietary products. The bird species in question, as studies have shown, are at risk of infection with parasitic worms, which cause great damage to poultry farming.

In Uzbekistan, much attention is paid to the development of poultry farming to provide the population with high-quality poultry products. However, parasitic environmental pollution, infection of poultry with numerous types of helminths, hinders the development of poultry farming.

Conducted scientific research in this direction shows a significant spread of helminths among domestic chickens and in the conditions of North-Eastern The species composition of helminths of domestic and wild Galliformes is discussed in the previous chapters of the dissertation.

Based on the degree of distribution of helminths, we have identified the main helminthiasis of chickens, turkeys, and guinea fowl bred in private farms and farms in a number of areas above the indicated areas. These include the following helminthiases: rayetinosis, scriabiniasis, choanotheniosis, echinolaposis, echinostomiasis, capilliasis, ascaridiosis, heterokidiasis, acuariosis, dyspharinkosis. These diseases sharply reduce productivity and, with a high intensity of invasion, can lead to the death of birds, especially young chickens.

Infection of birds with cestodes, trematodes and nematodes was established based on the results of autopsy and examination of feces using known methods (Dubinina, 1971, Kotelnikov, 1976).

The assessment of the epizootic situation regarding helminthiases in the studied birds was carried out using standard indicators - the extent of invasion (EI, %) and the intensity of invasion (II, ind.). Chickens, turkeys and guinea fowls of North-Eastern Uzbekistan are parasitized by about 30 species of helminths. Among them, the most pathogenic and widespread are representatives of the following families - Davaineidae, Hymenolepididae, Choanotaeniidae, Echinostomatidae, Plagiorchiidae, Prostogonimidae, Capillariidae, Ascarididae, Heterakidae, Acuaridae, which cause serious diseases of Galliformes, especially young birds.

The bioecology of helminthiasis pathogens has characteristic features, which we will focus on based on the results of our research and analysis of literature data.

Rayetiniosis is a helminthic disease infected with cestodes of the genus *Raillietina*, parasitizing the intestines of chickens, turkeys and guinea fowls. In our material, rayetins are represented by 3 species: *R.echinobothrida, R.tetragona* and *R.penetrans*.

Quite large cestodes, their length reaches up to 25 cm, the width of the joints is 1 - 4 mm. The scolex is rounded. The proboscis is armed with hooks.

Development occurs with the participation of intermediate hosts - ants (Petrochenko, Kotelnikov, 1976). Cestode segments released into the external environment with feces are readily eaten by ants. In the body of which cysticercoids develop within 43 - 46 days at a temperature of 26 ° C (Romanenko, 1970.)

When eating ants with cysticercoids, chickens, turkeys, and guinea fowl become infected with rayetins. Infection of birds occurs in the warm seasons of the year, in summer and early autumn. In the body of birds, rayetins reach sexual maturity within 2 - 3 weeks after infection (images 1. – 2).

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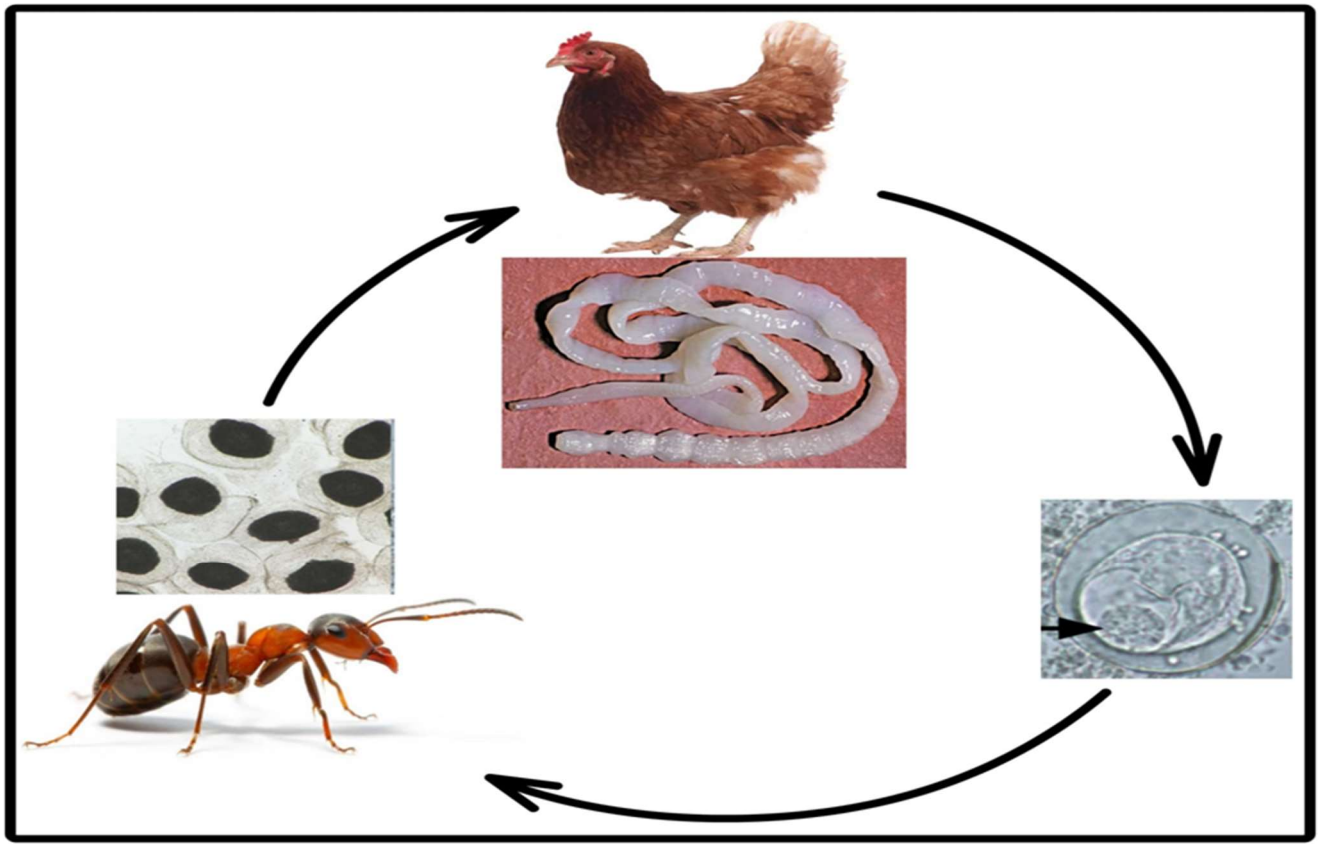

Images 1. Scheme of the development cycle of the cestode *Raillietina tetragona*

Images 2. General view of the cestode *Raillietina tetragona* from the chicken intestine The disease is widespread.

We record rayetinosis in chickens and turkeys. It was identified In free-range poultry farms in Tashkent, Syrdarya, and Jizzakh regions. Rayetinosis noted in guinea fowl in Gallyaaral district, Jizzakh region. The extent of infection of galliformes with rayetinosis ranged from 15 to 45%, with an intensity of invasion from 3 to 17 specimens.

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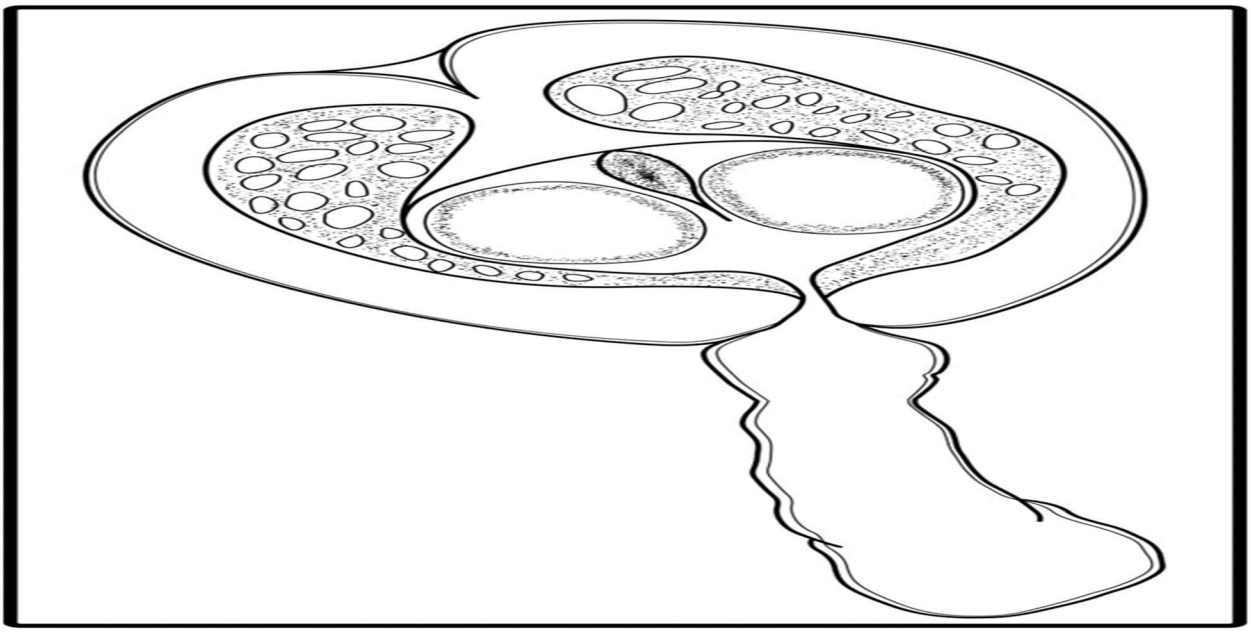
Echinoleposis. Echinoleposis is a disease caused by the cestode Echinolepis carioca (Hymenolepididae), which parasitizes the small intestine of chickens and turkeys.

The length of the cestode strobili is up to 120 mm, the maximum width is 0.7 mm. The proboscis is not armed. Suckers are armed with hooks. Their length is 0.004 – 0.008 mm.

The biological cycle occurs with the participation of intermediate hosts – beetles (Coleoptera). Cysticercoids develop in the body of beetles (Images 3).

Images 3 *Echinolepis carioca* is a cysticercoid isolated from beetles (Coleoptera)



Mature segments of choanothenia emerge from the intestines of birds into the external environment and move along the surface of the droppings, crawl onto the grass to a height of 8-10 cm and leave eggs in place.

Locusts and other intermediate hosts, eating plant leaves, also ingest parasite eggs.

Infestation of chickens and turkeys occurs during the warm season from June to October. Damage reaches 10-25%. Injured birds are a source of environmental pollution.

Choanotheniosis. This is a disease caused by the cestode *Choanotaenia infundibulum* (Choanotaeniidae), parasitizing the small intestine of chickens, turkeys and guinea fowl, as well as wild galliformes (pheasants, quails).

It is also widespread in the farms of North-Eastern Uzbekistan. The causative agent of the disease is a rather large cestode. The length of the strobile reaches up to 200 mm, the maximum width is 2.3 mm. The proboscis is equipped with 16-22 hooks.

The biological cycle occurs with the participation of intermediate insect hosts. About 70 species of beetles, grasshoppers, locusts and flies have been registered as intermediate hosts.

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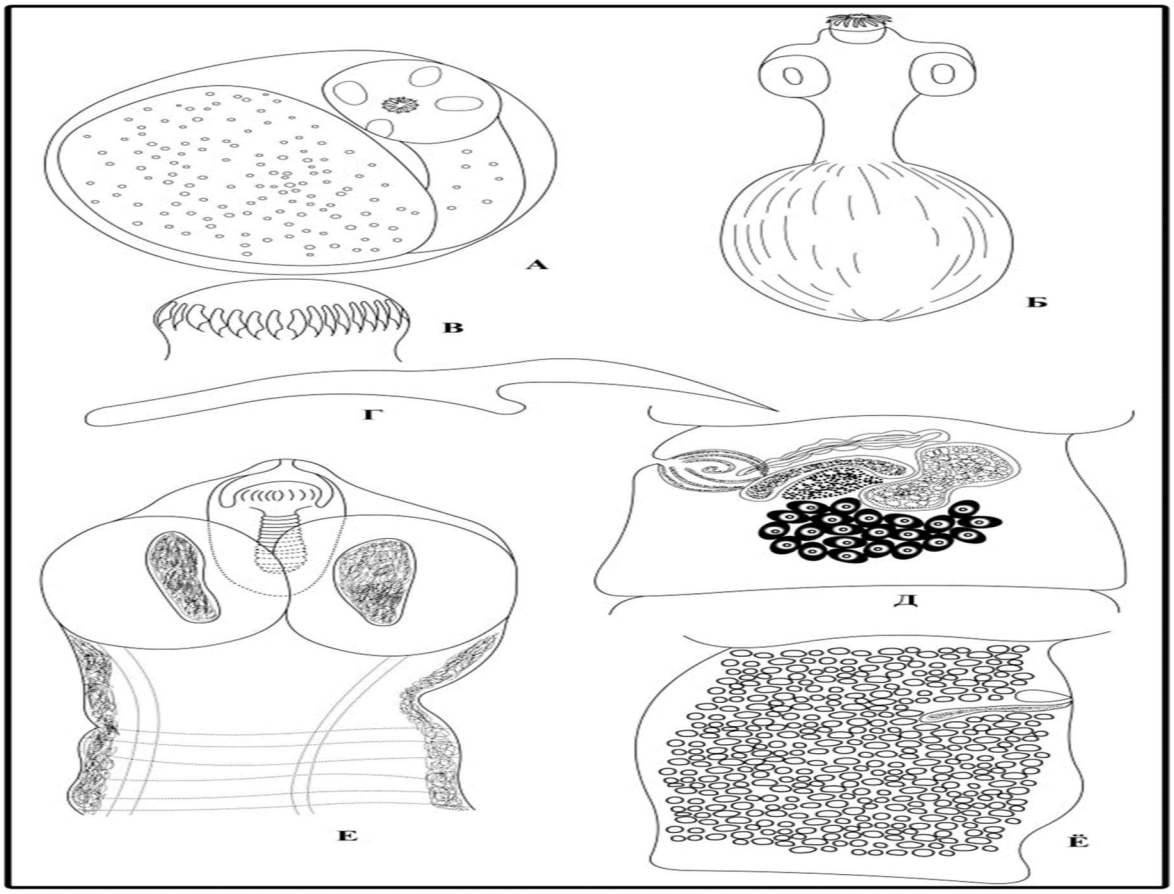

Images 4. *Choanotaenia infundibulum* A – E – details of organs during the development of the parasite (From K.I. Skryabin, 1917).

Mature segments of choanothenia emerge from the intestines of birds into the external environment and move along the surface of the droppings, crawl onto the grass to a height of 8-10 cm and leave eggs in places. Locusts and other intermediate hosts, eating plant leaves, also ingest parasite eggs. Cysticercoids develop in the locust body within 17-20 days at a temperature of 24-32° C. Choaonoteny cysticercoids are oval or round formations of milky white color, consisting of a dense capsule

The larva has a scolex with suckers and a proboscis armed with 17-20 hooks. By eating beetles and locusts with cysticercoids, birds become infected with choanothenia.

In the intestines of a chicken, parasites reach a sexually mature state after 14-17 days (Petrochenko, Kotelnikov, 1976). The source of spread of choanotheniosis is infected chickens, turkeys, and guinea fowl. Birds of all ages are affected. The infestation of birds in poultry farms in North-Eastern Uzbekistan varies widely from 25.5 to 42%. The intensity of invasion reaches 3-17 copies. Kabilov (1983) reports that darkling beetles in the Fergana Valley of Uzbekistan were infected with choanothenia cysticercoids - 16%.

Free-range chickens, turkeys and guinea fowls become infected by eating intermediate hosts containing infective larvae of the parasite. Birds of all ages are affected. In some farms in North-Eastern Uzbekistan, the infestation rate is 13.0-29.7%. The intensity of invasion varies from single to dozens of specimens. The disease is registered in the summer.

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Thus, we examined the main helminthiases of domestic Galliformes in North-Eastern Uzbekistan. The epizootic process of helminthiasis occurs on the basis of two or three component parasitic systems, where the infection of gallinaceous birds with individual helminthiases varies widely. In some farms raising poultry using free-range systems, helminth infestation reaches up to 29% (Table 1)

Table 1

General characteristics of infection of poultry with pathogens of the main helminthiases in North-Eastern Uzbekistan

Genus	Degree of infection					
	extensive invasion, %			Intensive invasion, exem.		
	Lim	M_+m	Cv	Lim	M_+m	Cv
Raillietina	15-45	28±2,61	0,36	3-17	10±1,15	0,44
Echinolepis	10-15	12,4±0,48	0,15	1-6	3,26±0,45	0,53
Choanotenia	25-42	33,6±1,48	0,17	3-17	10±1,15	0,44

As the data in Table 1 show, the degree of infection of the studied birds with helminthiasis is quite high, it varies widely, where the extent of infection with cestodes was 8-45%, trematodes 3 - 21% and nematodes 4 - 90%. The intensity of helminth infection reaches from single to 2-3 dozen specimens.

It should be noted that in most infected animals, from two to nine types of helminths are registered, which characterizes mixed forms of invasion. The helminthological complex was mainly recorded in the form of associated groups-helminthocenoses. Associations are represented by 2-9 species of helminths. The most common are 3-, 4- and 5-species associative groupings, consisting of cestodes, trematodes and nematodes.

These features of the epizootic process of helminthiasis must be taken into account in planning and carrying out antihelminthic measures in the farms of North-Eastern Uzbekistan.

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