

MONITORING OF CYSTICERCOSIS OF RABBITS IN FARMS OF DIFFERENT FORMS OF OWNERSHIP

Bogach M. V.¹, Horobei O. O.², Ivanchenko O. M.³, Vovk D. V.²

¹ Odesa Research Station of the National Scientific Center 'Institute of Experimental and Clinical Veterinary Medicine', Odesa, Ukraine

² National Scientific Center 'Institute of Experimental and Clinical Veterinary Medicine', Kharkiv, Ukraine, e-mail: getready2010@ukr.net

³ Odesa State Agrarian University, Odesa, Ukraine

Summary. The aim of the study was to determine the spread of pathogens of parasitic diseases in the digestive organs of rabbits in farms of various forms of ownership in Odesa Region. One thousand and two hundred rabbits of different age groups in specialized farms (which they use cage keeping of animals in compliance with all zoohygienic requirements and a balanced feeding ration), as well as 582 rabbits in private farms (which the type of feeding was mixed) were examined. Prevalence of parasitic infections of rabbits in specialized farms is 52.3%, in household farms — 85.1%. In specialized farms, prevalence of cysticercosis is 2.6% (with intensity of 3–7 cysticerci), eimeriosis — 14.0%, trichostrongylosis — 13.6%, and passalurosis — 20.6%, two-component (eimeriosis + cysticercosis) infection — 1.0%, three-component (eimeriosis + cysticercosis + passalurosis) infection — 0.5%, total infestation (both mono- and mixed infections) with cysticerci — 4.1%. In homestead farms, prevalence of cysticercosis is 27.7% (with intensity of 21–64 cysticerci), eimeriosis — 15.6%, trichostrongylosis — 3.6%, and passalurosis — 6.7%, two-component (eimeriosis + cysticercosis) infection — 24.2%, three-component (eimeriosis + cysticercosis + passalurosis) infection — 7.2%, total infestation (both mono- and mixed infections) with cysticerci — 59.1%. Cysticercosis is a common infection of rabbits in Odesa Region, which occurs often as part of mixed infections with pathogens eimeriosis and passalurosis. The total infestation of rabbits with cysticerci in homestead farms was 55.0% higher than in specialized ones. One-component infestations in specialized farms is 97.1% of sick rabbits, and in homestead farms — 63.0%; two-component (eimeriosis + cysticercosis) infection — 1.9% and 28.5%, respectively; and three-component (eimeriosis + cysticercosis + passalurosis) infection — 1.0% and 8.5%, respectively

Keywords: pathogens, spread, Odesa Region, Ukraine, eimeriosis, passalurosis, trichostrongylosis

Introduction. Rabbits are prone to various diseases. Among the many pathogens, parasites play a major role in the emergence of a number of diseases in rabbits with increased morbidity and mortality, leading to economic losses. Some of the parasites are helminths, such as round worms, tapeworms and eimeria (Hajipour and Zavarshani, 2020; Bogach and Franchuk, 2018; Szkucik et al., 2014).

A significant number of reports, based on studies by both domestic and foreign authors, indicate that in the body of an animal of this species, several species of parasites can be localized simultaneously, which form a parasitocenosis (Yatusevich et al., 1990; Bogach and Trofimov, 2007; Strohle and Christensen, 1983).

Along with protozoa, helminths and mites, various types of bacteria, viruses and fungi can be synchronously included in its composition (Youn, 2009).

The spread of the infestation depends on the age of the animals, the housing system, as well as the preventive and therapeutic measures used (Drouet-Viard and Fortun-Lamothe, 2010; Kosenko et al., 2004; Jeklova et al., 2007; Pakandl et al., 2008).

Scientists have found that 41.6% of rabbits and 21.7% of hares are affected by pisiform cysticercosis. The intensity in rabbits ranges from 3 to 121, in hares — from

7 to 48, and even up to 600 bubbles (Dubina, 2002; Duda et al., 2018; Melillo, 2007). In terms of industrial production, cysticercosis was registered in 4.27% of rabbits (Sołtysiak, Bednarski and Piekarska, 2007).

The study of parasitic fauna of rabbits in homestead and specialized farms is of current scientific and practical importance, as it allows for timely diagnosis and development of effective schemes for the treatment and prevention of mixed infections in rabbits.

The aim of the study was to determine the spread of pathogens of parasitic diseases in the digestive organs of rabbits in farms of various forms of ownership in Odesa Region.

Materials and methods. The material for the study were rabbits of different age groups, which belonged to specialized farms of LLC 'BBPROM' (Shemetove, Berezivka District), SG LLC 'Southern' (Ruskoivanivka, Bilhorod-Dnistrovskiy District), and PSP 'Druzhba' (Izmail District) in Odesa Region in which they use cage keeping of animals in compliance with all zoohygienic requirements and a balanced feeding ration (the main feeding ration was granulated feed), as well as private farms in Odesa, Berezivka, and Rozdilna districts of Odesa Region in which the type of feeding was mixed (hay, grain, and roots were additionally added to the granulated feed).

The diagnosis was established taking into account epizootological data, clinical signs, laboratory tests and data of autopsy, which were performed in the Laboratory of Parasitology of the Odesa Research Station of the National Scientific Center 'Institute of Experimental and Clinical Veterinary Medicine' and in slaughterhouses of the enterprises.

To diagnose rabbit eimeriosis, the selected material (feces) was examined by Darling and Fülleborn method according to GOST 25383-82 (Gosstandart, 1982). The number of oocysts was counted under a small magnification microscope (10×10) in 20 fields of view, followed by calculation of the average. In order to determine the level of infestation with *Passalurus ambiguus* and *Trichostrongylus instabilis*, the feces of rabbits were examined by McMaster method for the presence and number of eggs of the pathogen. The level of spontaneous cysticercosis in rabbits was determined visually after slaughter and at autopsy by the number of bubbles on the internal organs.

The prevalence was determined by statistical processing. The intensity was determined by counting the number of helminth eggs and cysticerci in the implementation of incomplete helminthological autopsies of intestines of slaughtered rabbits according to Scrbabin (1928).

Results and discussions. In specialized farms, 1,200 rabbits were examined, of which 627 (52.3%) animals were infested with parasitic pathogens. In household farms, 495 (85.1%) from 582 examined rabbits were infected with parasites (Table 1).

According to the data of postmortem examination in specialized farms, cysticercosis of rabbits was registered in 31 (2.6%) animals with intensity of 3–7 cysticerci. Eimeriosis was registered in 168 (14.0%) animals, trichostrongylosis — in 163 (13.6%), and passalurosis — 247 (20.6%). Two-component (eimeriosis + cysticercosis) infection was present in 1.0% of rabbits, three-component (eimeriosis + cysticercosis + passalurosis) infection — in 0.5%. The total infestation (both mono- and mixed infections) of rabbits with cysticerci in specialized farms was 4.1% (Table 1).

In homestead farms, cysticercosis was registered in 161 (27.7%) animals with intensity of 21–64 cysticerci. Eimeriosis was registered in 91 (15.6%) animals, trichostrongylosis — in 21 (3.6%), and passalurosis — 39 (6.7%). Two-component (eimeriosis + cysticercosis) infection was present in 24.2% of rabbits, three-component (eimeriosis + cysticercosis + passalurosis) infection — in 7.2%. The total infestation (both mono- and mixed infections) of rabbits with cysticerci in homestead farms was 59.1% (Table 1).

Table 1 — Measures of parasitic diseases in digestive organs of rabbits in farms of various forms of ownership in the Odesa Region (according to the results of autopsies)

Farm type / feeding type / total number of examined rabbits	Disease / Pathogen	Disease cases	Prevalence, %	Percentage of cases, %	Intensity, specimens
Specialized / granulated feed / 1,200	Eimeriosis / <i>Eimeria</i> spp.	168	14.0	26.8	1,060.0 ± 112.5*
	Passalurosis / <i>Passalurus ambiguus</i>	247	20.6	39.4	22–36**
	Trichostrongylosis / <i>Trichostrongylus instabilis</i>	163	13.6	26.0	11–13**
	Cysticercosis / <i>Cysticercus pisiformis</i>	31	2.6	4.9	3–7***
	Eimeriosis + Cysticercosis	12	1.0	1.9	—
	Eimeriosis + Cysticercosis + Passalurosis	6	0.5	1.0	—
	Total	627	52.3	100	—
Household / mixed feed / 582	Eimeriosis / <i>Eimeria</i> spp.	91	15.6	18.4	1,210.0 ± 105.2*
	Passalurosis / <i>Passalurus ambiguus</i>	39	6.7	7.9	35–111**
	Trichostrongylosis / <i>Trichostrongylus instabilis</i>	21	3.6	4.2	21–35**
	Cysticercosis / <i>Cysticercus pisiformis</i>	161	27.7	32.5	21–64***
	Eimeriosis + Cysticercosis	141	24.2	28.5	—
	Eimeriosis + Cysticercosis + Passalurosis	42	7.2	8.5	—
	Total	495	85.1	100	—

Notes: * — number of oocysts in 1 g of feces; ** — number of helminths in the intestinal cavity; *** — number of cysticerci on the mesentery and omentum.

The total infestation of rabbits with cysticerci in homestead farms was 55.0% higher than in specialized ones.

One-component infestations in specialized farms were registered in 97.1% of sick rabbits, and in homestead farms — in 63.0%; two-component (eimeriosis +

cysticercosis) infection was present in 1.9% and 28.5%, respectively; and three-component (eimeriosis + cysticercosis + passalurosis) infection — in 1.0% and 8.5%, respectively (Figs. 1–2).

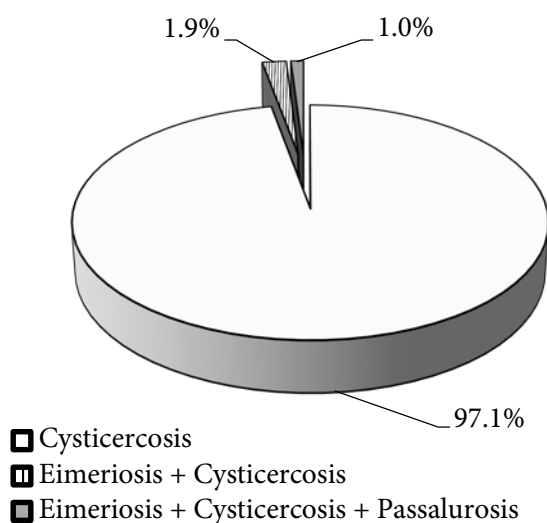


Figure 1. Mono- and mixed infections of rabbits in specialized farms

Conclusions. 1. Prevalence of parasitic infections of rabbits in specialized farms in Odesa Region is 52.3%, in household farms — 85.1%.

2. In specialized farms, prevalence of cysticercosis is 2.6% (with intensity of 3–7 cysticeri), eimeriosis — 14.0%, trichostrongylosis — 13.6%, and passalurosis — 20.6%, two-component (eimeriosis + cysticercosis) infection — 1.0%, three-component (eimeriosis + cysticercosis + passalurosis) infection — 0.5%, total infestation (both mono- and mixed infections) with cysticeri — 4.1%.

3. In homestead farms, prevalence of cysticercosis is 27.7% (with intensity of 21–64 cysticeri), eimeriosis — 15.6%, trichostrongylosis — 3.6%, and passalurosis — 6.7%, two-component (eimeriosis + cysticercosis)

Thus, cysticercosis is a common infection of rabbits in Odesa Region, which occurs often as part of mixed infections with pathogens eimeriosis and pasalurosis.

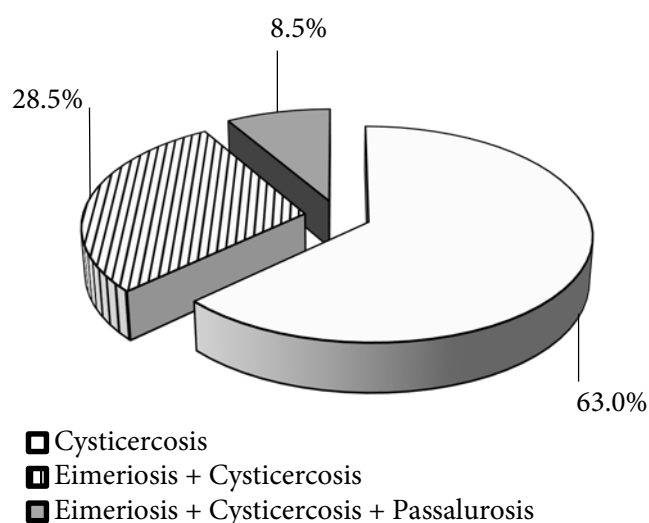


Figure 2. Mono- and mixed infections of rabbits in homestead farms

infection — 24.2%, three-component (eimeriosis + cysticercosis + passalurosis) infection — 7.2%, total infestation (both mono- and mixed infections) with cysticeri — 59.1%.

4. Cysticercosis is a common infection of rabbits in Odesa Region, which occurs often as part of mixed infections with pathogens eimeriosis and pasalurosis. The total infestation of rabbits with cysticeri in homestead farms was 55.0% higher than in specialized ones. One-component infestations in specialized farms is 97.1% of sick rabbits, and in homestead farms — 63.0%; two-component (eimeriosis + cysticercosis) infection — 1.9% and 28.5%, respectively; and three-component (eimeriosis + cysticercosis + passalurosis) infection — 1.0% and 8.5%, respectively.

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