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MEASURES AGAINST ECHINOCOCCUS AND COENUROSIS OF ANIMALS IN UZBEKISTAN

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Abstract. *The article includes the results of health measures against sheep echinococcus and coenurosis, dog echinococcus and multiceptosis in farms "Pachkamar", "Guzor" and "Nishon" in Kashkadarya region. Prior to the implementation of our measures, echinococcus infestation of sheep were 14.6 %, 16.6 % and 4.5 %; coenurosis infestation were 11.6 %, 18.2 %, 13.5 in "Pachkamar", "Guzor" and "Nishon" farms respectively. Also dogs echinococcus infestation were 10.4 %, 11.4 %, 6.1 % and coenurosis infestation were 17.6 %, 18.5 % and 18.2 % in aforementioned farms respectively. By the end of the research, in 4-5 year of implementation of measures, it has not been registered sheep echinococcus and coenurosis, dog echinococcus and multiceptosis. The effectiveness of activities was 100.0 %.*

Keywords: *echinococcus, coenurosis, multiceptosis, protoskolex, ovum, larvae, invasiveness, imaginal and larval dehelminthization (worming).*

Breeders and specialists of veterinary services for a long time have known echinococcus and coenurosis, which were the cause of huge economic losses to livestock.

For the first time, Russian scientist A.P. Fedchenko (1879-1886) has studied these diseases in the territory of Uzbekistan. He conducted research in Bukhara, Samarkand and Tashkent regions. He could not bring his research to an end because of the death after the accident. His rich helminthological studies were completed by another scientist G. Krabbe (1879) in Denmark.

After A.P. Fedchenko, academician K.S. Skryabin continued researches on helminthiasis of animals, particularly echinococcus and coenurosis. Data on the subject written in the monograph of K.I. Skryabin - "Fauna of helminths in Turkestan" which was published in 1916.

With the opening of helminthological department at the Uzbek Scientific Research Veterinary Institute, in 1930, head of this institution, Professor V.S. Ershov tested 70 sheep for slaughter and 30 fallen sheep at the farm "Koson Uzbek". Echinococcus was detected in 28 sheep, which is 40.0 % of all studied livestock. In addition, he set 167 cases of sheep echinococcus among 230 sheep, which amounts to 75.2 %.

V.S. Ershov proposed the scheme of measures against aforementioned diseases, which consists of three items, where has given the high prevalence of sheep echinococcus:

1. Registration of all the dogs, and compulsory deworming of cloving dogs;
2. Deworming of new dogs before receiving them to the flocks;
3. Organizing exams on veterinary and sanitation for breeders.

After B.C. Ershov, research on echinococcus and coenurosis received a comprehensive study in many state farms of Uzbekistan. In particular, M.I. Sopolchenko (1939) investigated the echinococcus and coenurosis in the farm "Ak Kapchigay" where the disease prevalence was 27.3 %. Author carried out recreational activities on the territory of the farm, which consist of the following stages:

1. 3 times worming of all dogs, in particular, in April, July and September;
2. The destruction of stray and homeless dogs;
3. Head of sheep affected sheep coenurosis subjected to incineration after slaughter.

Similar studies were carried out by F.S. Sarimsakov (1949-1951) at the farm "Nishon", by I.H. Irgashev (1963) in the farm "Karnab", by Sh. Azimov (1960) in "Khavast", by N.M. Matchaiov (1961, 1969) in the "Keles" block in Tashkent region and throughout the Bukhara region, by A. Murtazaev (1966) in the Republic of Karakalpakstan. As a result, they proposed measures against coenurosis and echinococcus among animals. This led to a reduction of infection among animals. There were not coenurosis cases in Bukhara region among sheep.

An analysis of studies conducted over 50 years in Uzbekistan have shown that the coenurosis and echinococcus cases among animals decreased. But the weakening of the measures led to an increase in the disease among animals. It argues that the proposed control measures are not enough against echinococcus and coenurosis among animals. In this connection, it is required to find new effective methods to combat these diseases.

Materials and methods of the research

On this basis, it has been held works in three farms of Kashkadarya region, in particular in the "Pachkamar", "Guzor" and "Nishon" farms. These farms adjacent to each other, and borders with farms "Talimarjon", "Amudarya" and "Kuhi tong" of Turkmenistan from the west side. In these farms of Kashkadarya region, measures against echinococcus, and coenurosis were carried out, which includes 8 points, which is quite different from the previous methods:

1. Registration of all dogs;
2. Registered dogs are dehelminthized 8 times a year, including 4 times of imaginal and 4 times of preimaginal

dehelminization. Pre;—agi.-a'. worming differs from the imaginal that the dog was not tethered and every 45 days after the imaginal;

3. Dehelminization: was carried out with drugs - arecoline hydrobromide and praziquantel;
4. All stray and homeless dogs were eliminated in the farms;
5. Sheep diseased with coenurosis were separated according to the veterinary sanitation, head of these sheep subjected to incineration after slaughter;
6. Lambs aged 2.0-2.5 months immunized against coenurosis once a year and twice against echinococcus in a dose of 1.0 ml. intramuscularly;
7. In flocks, dead animals with internal organs and heads were burned in the concrete furnaces;
8. Explanatory work was systematically carried out for the breeders about the nature of ongoing health measures against echinococcus, coenurosis and multiceptosis;

In addition, dead animals among farms established echinococcus prevalence and coenurosis. Identified bubbles with protoscolex parasite examined for invasive. For what, this stuff deliberately infected dogs free from these diseases. Thus, resulted protoscolex placed in a solution consisting of 1: 1 from the bile of cattle and saline for 15-20 min. at a temperature of +36-38 °C. The solution is in protoscolex movement felt alive. They were dark black in color with well-developed hooks.

Dogs infected with echinococcus and multiceptosis determined by their worming and 'opening the small intestine. Dogs were dehelminized by arecoline hydrobromide 5 mg. per kg of body weight in a 0.1 % solution twice. In this case, the detected echinococcus and multiceptosis subjected to the study.

The results of research

On the study were subjected to 384 sheep in the farm "Pachkamar", 452 sheep in the "Guzor" and 651 sheep in the farm "Nishon" regardless of age. In addition, these farms were examined for infestation of 125, 184 and 132 dogs respectively. The study results are given in Table 1.

Table 1

Name of farm	Age of sheep	Studied sheep	including affected				Studied dogs	including affected			
			echinococcus	%	multiceptosis	%		echinococcus	%	megrims	%
Pachkamar	Older than 3 years	142	40	28.4	-	-					
	Up to 3 years	78	11	14.1	4	5.1					
	Up to one year	164	5	3.0	24	14.6					
	Only:	384	56	14.6	28	11.6	125	13	10.4	22	17.6
Guzor	Older than 3 years	156	46	22.5	-	-					
	Up to 3 years	85	11	27.0	3	3.5					
	Up to one year	211	5	2.8	51	24.2					
	Only:	452	75	16.6	54	18.2	184	21	11.44	34	18.5
Nishon	Older than 3 years	250	18	7.2	-	-					
	Up to 3 years	150	6	4.0	8	5.3					
	Up to one year	251	5	1.9	46	18.3					
	Only:	651	29	4.5	54	13.5	132	8	6.1	24	18.2
Total		1487	160	10.8	136	9.1	441	42	9.5	80	18.1

Research Analysis of Table 1 shows that these sheep farms infected with echinococcus by 10.8 %, 9.1 %, coenurosis, dogs infected with echinococcus by 9.5 % and with multiceptosis 18.1 %, regardless of age before the introduction of measures. If we analyse these numbers in every farm, in the farm "Pachkamar" these numbers were 14.6 %, 11.6, 10.4 and 17.6 %, respectively. "Guzor" farms indexes were - 16.6 %, 18.2% for the sheep and 11.4% and 18.5% for the dogs respectively. In "Nishon" farm - 4.5 % and 13.5 % in sheep and 6.1 %, 18.2 % in dogs. As for the sheep older than 3 years, the infection with echinococcus was the following: on the farm "Pachkamar" - 28.4 %, "Guzor" — 22.5 % and "Nishon" - 7.2 %. In the farm "Pachkamar", sheep under 3 years infected with echinococcus by 14.1 %, and coenurosis by 5.1 %, these indexes of "Guzor" farm are 27.0 % and 3.5 % also, for "Nishon" farm 4.0 % and 5.3 % respectively. The infection with the echinococcus and coenurosis of sheep up to 1 year in farms are following: "Pachkamar" farm - 3.0 % and 14.6 %, "Guzor" farm - 2.8 % and 24.2 %, and "Nishon" farm 1.9 % and 18.3 % respectively.

Thus, the infection of sheep with echinococcus and coenurosis farms in foothill and mountain areas, which include “Pachkamar” and “Guzor” in comparison with “Nishan” which located in the desert and pasture area was higher for 10.0-11.0%.

A year after the introduction of the sheep research showed that the infection of echinococcus and coenurosis decreased in animals.

The dramatic decline was observed among dogs. So, prior to the introduction of measures in dogs echinococcus infection was 9.5 %, a year later it was equal to 4.0 %, multiceptosis infection decreased from 18.1 % to 4.9 %. Such a drop was recorded in dogs in all three farms of the region. For example, in the farm “Pachkamar” the index decreased from 17.6 % to 7.8 %, in the “Guzor” from 18.5 to 3.2 % and in “Nishon” farm from 18.2 to 4.6 %.

The research results for two years after implementation of the developed measures against echinococcus, coenurosis and multiceptosis among animals are listed in Table 3.

The results of researches on animal for two years after the introduction against cestodosis are the following:

Table 2

Name of farm	Age of sheep	Investigated, heads	including affected				Studied dogs, animals		including affected			
			echinococcus	%	multiceptosis	%	echinococcus	%	megrims	%		
Pachkamar	Older than 3 years	108	24	22.2	-	-						
	Up to 3 years	52	3	5.8	1	1.9						
	Up to one year	56	1	1.8	1	1.8						
	Only:	216	28	13.0	2	0.9	128	2	1.5	2	1.6	
Guzor	Older than 3 years	126	16	12.7	-	-						
	Up to 3 years	85	4	4.7	2	2.3						
	Up to one year	224	-	-	1	0.4						
	Only:	435	20	4.6	3	1.0	187	2	1.1	3	1.6	
Nishon	Older than 3 years	157	6	3.8	-	-						
	Up to 3 years	52	2	3.9	1	1.9						
	Up to one year	142	1	0.7	3	2.1						
	Only:	351	9	2.6	4	1.1	214	4	1.9	3	1.4	
Total		1002	57	5.7	9	0.9	529	8	1.5	8	1.5	

The results of researches on animals in the second year after the implementation of measures revealed that the infestation of sheep with echinococcus decreased up to 5.7 %, coenurosis up to 0.9 %. Echinococcus and multiceptosis among sheep decreased twice, coenurosis from 9.1 % to 0.9 %, the echinococcus of dogs decreased up to 1.5 % and dog multiceptosis decreased from 18.1 to 1.5 %. The dramatic decline of echinococcus and coenurosis was registered from 11.6 to 0.9 % in sheep farm “Pachkamar”, in “Guzor” farm echinococcus is from 16.6 to 4.6 %, coenurosis is from 18.2 to 1.0 %, in “Nishon” echinococcus in average is from 4.5 to 2.6 %, coenurosis is from 13.5 to 1.1 %.

The research results on the third year of implementation are shown in Table 3.

The results of animal studies in the third year of implementation against cestodosis

Table 3

Name of farm	Age of sheep	Investigated, heads	including those affected				Studied dogs, animals	including those affected			
			echinococcus		multiceptosis			echinococcus		megrims	
Pachkamar	Older than 3 years	115	14	12.2	-	-					
	Up to 3 years	68	1	1	1	1.5					
	Up to one year	48	14	-							
	Only:	231	15	6.5	1	0.4	128	2	1.6	-	-

Table 3 (continued)

Name of farm	Age of sheep	Investigated, heads	including those affected				Studied dogs, animals	including those affected			
			echinococcus		multiceptosis			echinococcus		megrims	
Guzar	Older than 3 years	142	8	5.6	-	-					
	Up to 3 years	92	-	-	-	-					
	Up to one year	233	-	-	1	0.4					
	Only:	467	8	1.7	1	0.2	190190	1	0.5	-	-
Nishan	Older than 3 years	160	5	3.1	-	-					
	Up to 3 years	54	-	-	-	-					
	Up to one year	148	-	-	1	0.7					
	Only:	362	5	1.4	1	0.2	216216	1	0.5	-	-
Total		1060	28	2.6	3	0.2	534534	4	0.7	-	-

Animal studies in the third year of implementation showed that in 1060 studied sheep, echinococcosis disease found in 28 sheep, that is 2.6 %, coenurosis found in 3 sheep, that is 0.2 %, among the lambs, coenurosis was found in one head in the farms “Guzor” and “Nishon”. Among the sheep up to 3 years, echinococcosis infection case was just one in the farm “Pachkamar”. Cases of infection with echinococcosis of dogs found in 4 dogs. That is 0.7 % and there was no multiceptosis cases at all.

Discussion

Implemented studies showed that for the period of 3-4 years after the introduction of our proposed measures led to a sharp reduction of echinococcosis and coenurosis among the sheep, and multiceptosis and echinococcosis in dogs. Specifically, in the farm “Pachkamar”, infection of sheep with echinococcosis was 14.6 %, with coenurosis — 11.6 % before the introduction of measures; by the end of the introduction of measures these indexes equaled 2.6 and 0.2 %, respectively. Echinococcosis in dogs decreased from 9.5 % to 0.7 %. At the end of the study, there were no multiceptosis cases in dogs.

Similar results were obtained from the implementation of measures in the farms “Guzor” and “Nishon”. So, prior to the introduction of measures infection of sheep with echinococcosis were 16.6 and 4.5 %, coenurosis — 18.2 and 13.5 % respectively, dog echinococcosis were 11.4 and 6.1 %, multiceptosis - 18.5 and 18.2 % respectively in two farms; at endpoint of infestation, these figures were 2.6 and 0.2 % in sheep and dog echinococcosis - 0.7 % respectively. In the fourth year of implementation of measures, there were no cases of infestation among sheep and dogs.

From the fifth year of the study vaccination of sheep and dogs has not been implemented against echinococcosis. Immunization of sheep against coenurosis stopped from the second year. Dog dehelmintization against cestodosis was carried out twice a year from this year, instead of 8.6 and 4 times in previous years. Immunization against dog echinococcosis and multiceptosis implemented once a year. Similar measures were carried out systematically in the following years.

Conclusion

We can conclude that on the basis of the research:

1. The proposed measures have been very effective in the fight against echinococcosis, coenurosis and multiceptosis in animals.
2. Implementation of control measures led to recovery of the animals from cestodosis within 4-5 years.
3. The effectiveness of the vaccine against echinococcosis, coenurosis and multiceptosis of animals was equal to 78-85 %.
4. In the first year, vaccine against echinococcosis animal was carried out twice, coenurosis once and multiceptosis two times.

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ОСОБЕННОСТИ МЕР БОРЬБЫ С ЭХИНОКОККОЗОМ И ЦЕНУРОЗОМ ЖИВОТНЫХ В УЗБЕКИСТАНЕ

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Аннотация. В статье приведены результаты оздоровительных мер борьбы против эхинококкоза, ценуроза овец, эхинококкоза и мультицептоза собак в хозяйствах «Пачкамар», «Гузар» и «Нишане» Кашкадарьинской области. До внедрения наших мероприятий пораженность овец эхинококкозом в хозяйстве «Пачкамар» составляла 14,6 %, в «Гузар» 16,6 %, в «Нишане» 4,5 %, ценурозом — 11,6 %, 18,2 %, 13,5 %, собак эхинококкозом - 10,4 %, 11,4 %, 6,1 %, ценурозом — 17,6 %, 18,5 % и 18,2 % соответственно. К концу исследования на 4-5 годд внедрения мероприятий среди овец эхинококкоз и ценуроз и среди собак эхинококкоз и мультицептоз не регистрировались. Эффективность мероприятий составляла 100,0 %.

Ключевые слова: эхинококкоз, ценуроз, мультицептоз, протосколекс, яйцо, личинки, инвазионность, дегельминтизация, имангинальная, преимагинальная.