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GEOGRAPHICAL DISTRIBUTION OF ANTHRAX FOCI IN THE CENTRAL-EASTERN REGIONS OF TAJIKISTAN

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Abstract: the article presents data on the study of the epizootic situation in the soil foci of anthrax in animals. The geography of the distribution of soil foci of the disease on the territory of this region has been revealed. The geography of the distribution of soil foci of the disease on the territory of this region has been revealed. It has been established that the epizootic situation for anthrax in the central - eastern region of Tajikistan remains unfavorable to date. It was revealed that the geography of the disease coverage (sign / cities) over the past 5 years in the Regions of Republican Subordination has increased and in 2016-2020 in 8 (61.5%) out of 13district and cities was noted of anthrax among animals. It was revealed that the probability of relapse of anthrax periodicity repeating diseases among farm animals and people associated with the presence of a large number of stationary unfavorable points in developed animal husbandry and on the transport routes of animals.

Keywords: soil foci; anthrax; animals; distribution geography; transport routes of animals.

Introduction

One of the urgent goals of developing Tajikistan is to develop the livestock sector and thereby provide the population and industry of the country with biologically safe and environmentally friendly domestic products. One of the dangerous zoonotic diseases that has a significant impact on the development of animal husbandry and causes great socio-economic damage to the national economy of the country is anthrax.

Anthrax (Anthrax) is one of the most dangerous zoonotic infections that affects many species of animals, birds and people, which causes great socio-economic damage to the national economy of the republic. Due to their high resistance to external factors, anthrax spores remain stable foci of infection for decades. On the territory of many countries, including Tajikistan, anthrax foci pose a constant threat of epizootics and epidemic outbreaks among people who become infected both from animals and animal products, and from environmental objects contaminated with bacilli [1, 5, 8, 9, 10].

The purpose of the research is: to study the epizootic situation and the geographical zoning of anthrax foci in the central-eastern regions of Tajikistan. Distribution of districts into epizootic categories according to the number of anthrax outbreaks. Determination of factors contributing to their spread, as well as the impact of prevention methods on the manifestations of anthrax among farm animals in the region.

Material and research methods

The features of the manifestation of the infectious parasitic system of anthrax were studied in dynamic measurement using the methods of applied epizootology: epizootological

examination of disadvantaged points and foci of infections, modeling of the epizootic process, identification of risk factors, forecasting, retrospective analysis and expert assessment of the epizootic situation and anti-epizootic measures with a chronological depth of up to 83 years [6, 7, 8].

Research results

Statistical data of veterinary institutions of the Committee for Food Security under the Government of the Republic of Tajikistan and the results of many years of research by scientists of the Institute show that among agricultural, domestic and wild animals living in different climatic zones of Tajikistan, anthrax occurs regularly with a certain frequency. For 1937-2020, 1952 epizootic foci were registered on the territory of the republic, of which 756 (38.72%) were in the Central - Eastern regions of the country (Regional subordination regions). The analysis of the epizootic situation and the data of our own research allowed us to distribute the regions of Central-Eastern Tajikistan into three categories. The first included areas with a high epizootic risk, where from 7 to 30 anthrax foci were registered with systematic periodicity. To the second, areas with a moderate epizootic risk. This category included regions where, without systematic periodicity, only 1-3 foci of anthrax were noted. The third category included areas where anthrax was not registered at all or the disease has not been noted for the last more than 40 years, but there are old NPs (foci) of anthrax (Table 1 and Fig. 1). Despite the absence of registration of cases of anthrax among animals, this territory should not be classified as a permanently safe zone, since cattle are regularly moved across this territory from regions that are unfavorable for this disease, where contact is likely to occur and the risk of animal infection increases. Thus, as a result of the above, we can draw the following conclusions: The likelihood of anthrax recurrence with periodic recurrence of the disease among farm animals and people is associated with the presence of a large number of stationary disadvantaged points in areas of developed animal husbandry and on animal transhumance routes [6, 8].

Table 1 – Distribution of districts into epizootic categories depending on the registration of cases of anthrax for the period 1990-2020

Districts/cities	1990-1996	1997-2002	2003-2009	2010-2016	2017-2020	Total
	Areas with high epizootic risk					
Rudaki	5	11	6	7	1	30
Faizabad	1	2	9	5	1	18
Vahdat city	3	4	4	6	-	17
Tursunzade city	5	5	3	1	-	14
Dushanbe	3	10	3	2	-	18
Hisor	-	2	3	4	-	9
Varzob	1	2	1	1	2	7
Areas with moderate epizootic risk						
Shahrinav	-	2	-	1	-	3
Nurabad	-	-	2	-	-	2
Rogun city	-	-	-	1	-	1
Rasht	-	-	-	-	1	1
Areas with low epizootic risk						
Jirgatal/Lakhsh	The last NP was registered in 1974.					
Tajikabad	not registered NP					
Tavildara/Sangvor	not registered NP					
Note: NP – unfavorable point						

Picture 1 – Neblogopaluchny areas of Central-Eastern Tajikistan
(Regions of Republican subordination)

When studying cases of anthrax, depending on the timely implementation of anti-epizootic measures, it was revealed that, despite the regular vaccination of animals in the industrialized regions of Central Tajikistan (areas with a high epizootic risk), cases of anthrax in animals are recorded with a slight rise and fall. A pronounced frequency of epizootic manifestations is recorded in the districts of Rudaki, Faizabad, Varzob and the cities of Vakhdat and Tursunzade (Table 2), and in Dushanbe in 2016, 2 cases of anthrax were noted. One case has been reported at the city's zoo. In the period 2017-2020 cases of anthrax in the environment of animals in the city were not observed.

Table 2 – Information on the manifestation of anthrax depending on the vaccination of animals over the past 25 years

Districts/cities	years	% completion of vaccination of animals	Cases of anthrax among animals			
			Cattle	MRS	horse	lynx
Vahdat	2006-2020	Over 100	4	3	-	-
Varzob		Over 100	3	-	-	-
Hissar		Over 100	3	3	-	-
Rudaki		Over 100	8	9	-	-
Tursunzade		Over 100	1	-	-	-
Rogun		Over 100	1	-	-	-
Faizabad		Over 100	5	-	1	-
Shahrinav		Over 100	1	-	-	-
Nurabad		Over 100	2	1	-	-
Dushanbe			-	1	-	1
Sangvor/Tavildara			-	1	-	.
Jirgatal/Lakhsh	animals have not been vaccinated since 2010		-	-	-	-
Tajikabad	since 2010 animals have not been vaccinated		-	-	-	-
Total			28	17	1	1

As shown, long-term observations in stationary disadvantaged zones will provide only one vaccination of animals, the epizootic and epidemiological well-being of the region in terms of anthrax is not possible. In this regard, in all regions and zones with developed animal husbandry, where there are permanently unfavorable points (foci), in places of forage harvesting, wintering and flying pastures, as well as on the route of animal transhumance, it is necessary to carry out a set of measures to detect, protect epizootic foci and cattle burial grounds with further study of their activity.

Picture 2 – One of the methods of fencing the existing anthrax burials

Near anthrax burials (foci) to prevent: a) grazing of animals, harvesting fodder and sowing fodder crops and root crops; b) without the knowledge of veterinary specialists of the Committee for Food Security and its bodies on the ground, the destruction of anthrax burials (cattle burial sites, outbreaks) and c) their transfer to other places and the use of land that was under anthrax burials (outbreaks) and cattle burial sites for the construction of housing and other social facilities and sowing farmland.

In order to prevent the emergence of new NPs (foci) and protect the ecology of the region, all the corpses of animals that died from anthrax should be strictly destroyed by burning them in the crematorium (Picture 3 and 4) and not to allow the burial of animal corpses in the ground.

Picture 3 – Mobile crematorium for the destruction of corpses

Picture 4 – Stationary crematorium for the destruction of corpses

When carrying out all these measures, strictly observe the requirements of personal hygiene and veterinary and sanitary rules.

Discussion

Long-term observations of the institute's specialists show that in stationary disadvantaged areas, only one vaccination of animals will ensure epizootic and epidemiological well-being of the region in terms of anthrax is not possible. In this regard, in all regions and zones with developed animal husbandry, where there are permanently unfavorable points and epizootic foci, it is necessary to conduct a thorough epizootic survey. On the wintering grounds of animals and summer pastures, as well as on the way of the transhumance of animals and in places of forage harvesting, it is necessary to carry out a set of measures to detect, fence off epizootic foci and animal burial grounds with further study of their activity.

Conclusion

Thus, as a result of the above, we can draw the following conclusions: the likelihood of recurrence of anthrax with periodic recurrence of the disease among farm animals and people is associated with the presence of a large number of permanently unfavorable points in areas of developed animal husbandry and on animal transhumance routes, weakening of veterinary and sanitary supervision for the slaughter of animals, transportation and sale of products and raw materials of animal origin from disadvantaged areas. The competent authorities need to develop and implement a set of preventive measures to prevent infection of animals and people from existing anthrax burials (foci) and cattle burial grounds (Beccari pits) and thereby ensure the epizootic and epidemiological well-being of the Republic. n disadvantaged areas, special attention should be paid to informing the population about the danger of anthrax for people and animals and about personal prevention measures when working with animals and products of animal origin using the media of districts (cities) and regions, including newspapers, television and radio programs and seminars with the distribution of leaflets.

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ТӘЖІКСТАННЫҢ ОРТАЛЫҚ-ШЫҒЫС АЙМАҚТАРЫНДАҒЫ СІБІР ЖАРАСЫ ОШАҚТАРЫНЫҢ ГЕОГРАФИЯЛЫҚ ТАРАЛУЫ

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Аннотация: мақалада жануарлардағы сібір жарасының топырақ ошақтарындағы эпизоотиялық жағдайды зерттеу деректері келтірілген. Аталған облыс аумағында ауру топырақ ошақтарының таралу географиясы анықталды. Тәжікстанның орталық-шығыс аймағындағы сібір жарасының эпизоотиялық жағдайы бүгінгі күнге дейін қолайсыз болып отырғаны анықталды. Соңғы 5 жылда РӨП бойынша аурумен қамту географиясы (аудан/қала) артып, 2016-2020 жылдары 13 аудан мен қаланың 8-інде (61,5%) жануарлар арасында сібір жарасы тіркелгені анықталды. Ауыл шаруашылығы жануарлары мен адамдар арасында аурудың мезгіл-мезгіл қайталануымен сібір жарасының қайталану ықтималдылығы

дамыған мал шаруашылығы аймақтарында және малды көшіру жолдарында тұрақты жұмыс істемейтін нүктелердің көп болуымен байланысты екені анықталды.

Түйін сөздер: топырақ ошақтары; күйдіргі; жануарлар; таралу географиясы; тасымалдау жолдары.

ГЕОГРАФИЧЕСКОЕ РАСПРОСТРАНЕНИЕ СИБИРЕЯЗВЕННЫХ ОЧАГОВ В ЦЕНТРАЛЬНО-ВОСТОЧНЫХ РАЙОНАХ ТАДЖИКИСТАНА

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Аннотация: в статье изложении данные по изучению эпизоотической ситуации по почвенным очагам сибирской язвы животных. Выявлено география распространения почвенных очагов заболевания на территории указанного региона. Установлено, что эпизоотическая ситуация по сибирской язве в центрально-восточном регионе Таджикистана до настоящего времени остается неблагоприятной. Выявлено, что география охвата заболеванием (районов/городов) за последние 5 лет в РПП увеличилось и в 2016-2020 гг. в 8 (61,5%) из 13 районов и городов отмечено сибирская язва среды животных. Выявлено, что вероятность рецидивов сибирской язвы с периодичной повторяемостью заболевания среди сельскохозяйственных животных и людей, связана с наличием большого количества стационарно неблагополучных пунктов в зонах развитого животноводства и на путях перегона животных.

Ключевые слова: почвенные очаги; сибирская язва; животные; география распространения; пути перегона.