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EPIZOOTOLOGICAL MONITORING OF INFECTIOUS ANIMAL DISEASES IN ODESSA OBLAST

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This paper presents the study of the system of epizootological monitoring of infectious and invasive animal diseases, including zoonoses reported in Odessa oblast, based on the results of the laboratory screening tests. The nosological profile of the pathology of contagious animal and bird diseases has been established. The nosological profile of the pathology of contagious animal diseases in Odessa oblast is described by seven nosological entities. Among zoonoses reported in the region some can be transmitted by the alimentary route, i.e. through animal products, namely tuberculosis, rabies, erysipelas, colibacillosis and others.

Keywords: epizootological monitoring; laboratory screening tests; zoonoses.

Introduction. As reported by the World Health Organisation (WHO), there are about 150 nosological entities worldwide which are related to the diseases shared by humans and animals. By the WHO expert definition (1959; [5]): “zoonoses are diseases and infections that are naturally transmitted between vertebrate animals and humans”. Intense global trade of foodstuffs which involves fast transfer of animals and animal products between countries and continents is associated with an increased risk of the spread of animal and bird infectious diseases, including those harmful for humans [1, 2, 3]. The incidence of human illnesses caused by zoonotic diseases is also determined by the possibility of intensive contact of humans to epizootic zones, because, as reported by E.N. Pavlovsky, it is social factors that act as driving forces in such cases, making people to fall under the influence of biotic factors [4]. The production of material goods accounts for the interaction between groups of people and animal populations. Animal infectious disease hazard, as well as economic and social importance of such diseases, requires all social groups, in particular those concerned with agrarian business, to pay more attention to this issue.

To effectively control the epizootic process of infectious and parasitic diseases, it is necessary to conduct regular epizootological monitoring. It is due to the fact that causative agents, which regularly change their biological properties (due to the evolution of pathogens) and affect the intensity of the epizootic process, have been continuously circulating within animal populations.

The goal of this study is to conduct the epizootological monitoring and review the laboratory research findings on the zoonoses reported in Odessa oblast.

Material and methods. The research was carried out in the Department of Zootology and Parasitology; the analysis of the annual reports of Odessa Regional State Veterinary Medicine Laboratory, as well as the results of the laboratory screening tests for infectious and invasive diseases for the period 2011-2014 was performed. The data collected in the course of the research were retrospectively reviewed and processed using mathematical methods.

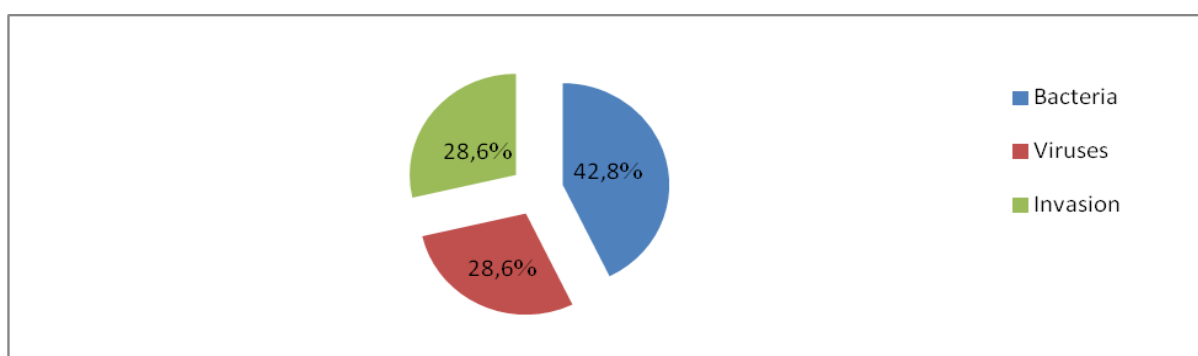
Results of the research. Monitoring of animal contagious disease reported in Odessa region and their prevention is one of the primary tools to handle the situation and develop preventive sanitary measures timely and properly.

Table 1.**Distribution of main nosological entities reported in Odessa region**

List of the reported nosological entities	Main types of productive animals and birds				Other animals -
	Cattle	Sheep and goats	Pigs	Birds	
Leucosis (positive reaction to the gel immunodiffusion test)	296	-	-	-	-
Tuberculosis (positive reaction)	3	-	-	-	-
Rabies	2	-	-	-	18
Erysipelas	-	-	100	-	-
Colibacillosis	-	76	-	56	-
Sarcoptic mange	-	4	9	-	-
Dirofilariasis	-	-	-	-	4

The nosological profile of the pathology of contagious animal diseases in Odessa oblast is described by seven nosological entities, such as leucosis, tuberculosis, rabies, erysipelas, colibacillosis, sarcoptic mange and dirofilariasis.

The distribution of microorganisms circulating in the parasitic systems of animals reported in Odessa oblast is presented in Figure 1.

Figure 1.**Parasitic systems in animals (various species) according to the laboratory screening results**

It has been found that viruses and invasive agents were co-actants in the circulating parasitic systems in 28.6% of cases while bacteria were co-actants in 42.8% of cases. The percentage of monohostal parasitic systems (leucosis, dirofilariasis) was 42.8%, while that of the polyhostal systems (tuberculosis, rabies, colibacillosis and sarcoptic mange) equalled to 57.2%.

The analysis of the involvement of animals in various infectious parasitic systems is presented in Table 2.

Table 2.**Distribution of animals involved in the infectious parasite systems (IPS)**

Species	Monohostal		Polyhostal		Total IPS
	IPS	%	IPS	%	
Cattle	1	20,0	3	60,0	5
Sheep and goats	-	-	1	20,0	5
Pigs	1	20,0	-	-	5
Birds			1	20,0	5
Other animals	1	20,0	1	20,0	5

As can be seen from the data given in the above table, cattle are the only involved in most cases of the polyhostal diseases, namely in three cases or 60%. Pigs, sheep and goats, birds and other animals (dogs, cats, and foxes) were only involved in a single case or 20%.

The nosological profile of the invasive parasitic system in animals as per the laboratory screening results is only represented by sarcoptic mange in sheep and pigs and dirofilariasis in dogs.

The nosological profile of the zoonoses is resulted from the statistical processing of the veterinary laboratory screening results.

Table 3.**Nosological profile of zoonoses reported in Odessa region over 2011-2014**

Nosological entity	Cases reported	% of total pathology of zoonoses
Tuberculosis	3	1,1
Rabies	20	7,8
Erysipelas	100	39,3
Colibacillosis	132	51,8

Tuberculosis, rabies, erysipelas and colibacillosis in birds, sheep and goats were reported among the zoonotic diseases registered in Odessa oblast.

Pathogenic bacteria were co-actants in 75.0% of cases while viruses – in 25.0%. The highest incidence of zoonotic diseases was diagnosed in pigs and birds – 100 cases or 39.3% and 132 cases or 51.8%, respectively; the lowest incidence was reported in dogs and cats – 20 cases or 7.8%.

Among zoonoses reported in the target region some can be transmitted by the alimentary route, i.e. through animal products.

The samples taken from the regional markets were examined in 59 state laboratories for the veterinary and sanitary expertise; those included expertise for diseases and sanitation of 24,602 beef samples; 141,507 pork samples; 22,047 lamb samples; 67,634 poultry samples; 6,484 samples of the meat of other animals; 213,121 samples of commercially manufactured finished meat products; 489,344 samples of milk and dairy products; 41,536 samples of fish and fish products; 2,535 samples of honey; 12,985 samples of eggs; 639,976 samples of vegetables, and 3,530 samples of vegetable oils. In the regional markets the expertise has revealed some products that failed to meet the veterinary and sanitation requirements by their

organoleptic, physical and chemical characteristics, and thus, they were sent for commercial utilization; those included 8.754 tons of beef; 5.135 tons of pork; 9.437 tons of lamb; 0.021 tons of meat of other animals with echinococcosis, fascioliasis, dicroceliasis, and coccidiosis found in rabbits; 5.371 tons of fish and fish products due to their poor organoleptic parameters; 4.649 tons of milk and dairy products due to adulteration, mechanical impurity, improper pH level or lack of supporting documents.

Conclusions.

1. The results of the laboratory screening tests for contagious diseases of different species of animals in Odessa region over the period 2011-2014 indicate that viruses and invasive agents are present in 28.6% of circulating parasitic systems while bacteria are found in 42.8% of cases.

2. The percentage of monohostal and polyhostal parasitic systems was 42.8% and 57.2%, respectively.

3. Tuberculosis, rabies, erysipelas and colibacillosis in birds, sheep and goats were reported among the zoonotic diseases in Odessa region.

4. 87.4% of the zoonoses reported in the target region can be transmitted via the animal products to humans.

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Епізоотологічний моніторинг інфекційних хвороб тварин на території Одеської області. Міхельсон Л.П.

У статті проаналізовано систему епізоотологічного моніторингу інфекційних та інвазійних хвороб тварин за результатами їх лабораторного скринінгу, у тому числі зоонозів, зареєстрованих на території Одеської області. Визначено нозологічний профіль заразної патології тварин та птиці. Нозологічний профіль заразної патології тварин на території Одеської області представлений 7 нозоформами. Через аліментарний шлях, а саме продукти тваринного походження можуть передаватися з зареєстрованих в області зоонози - туберкульоз, сказ, бешиха, колібактеріоз та інші.

Ключові слова: епізоотологічний моніторинг, лабораторний скринінг, зоонози.

Эпизоотологический мониторинг заразных болезней животных на территории Одесской области. Михельсон Л.П.

В статье проанализирована система эпизоотологического мониторинга инфекционных и инвазионных болезней животных по результатам их лабораторного скрининга, в том числе зоонозов, зарегистрированных на территории Одесской области. Определен нозологический профиль заразной патологии животных и птицы. Нозологический профиль заразной патологии животных на территории Одесской области представлен 7 нозоформами. Через алиментарный путь, а именно продукты животного происхождения могут передаваться из зарегистрированных в области зоонозов - туберкулез, бешенство, рожа, колибактериоза и др.

Ключевые слова: эпизоотологический мониторинг, лабораторный скрининг, зоонозы.