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BACTERIOLOGICAL CONTROL AND REGULARITIES OF *ERYSIPELOTHRIX INSIDIOSA* IN ODESSA REGION

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Based on research of patterns and local features of structural and functional organization of different types of centers of zoonotic erysipelas, significantly advanced understanding on common environmental and social nature of epizootic and epidemic manifestations of this infection in the region. Departmental diversity of control on epizootic and epidemic aspects of the etiologically single nozoform, have negative effect on the success of the fight and prevention of zoonotic infections.

Key words: *zoonotic erysipelas, parasitical coenosis groups, natural focal infections, zoonotic infections, livestock biosafety.*

Pontic steppe zone, even in the state of global human transformation, retains stable value as the arena of existence of many types of infectious parasites. Soils and field acrocyanosis of Odessa region, thanks to its diversity generally favorable for survival of sapronoses pathogens, providing a stable stationarity of initiated nozoforms [5].

The most common among these nozoforms in domestic animals are fixed sporadic and flash outbreak manifestations of erysipelas, which affect not only pigs, sheep and young cattle. In territorial terms the majority of these cases has a clear "binding" to the ground, tending to the ancient cattle trails, cattle burial grounds, placements of farms, as well as wet and boggy beams. [7] All this points directly to two main sources of infection: 1) - persistent groundwater sources; 2) - saprobiotic sources caused by natural carriers and feed / water transfer factors.

Substitution of populations of various wildlife species ,typical to steppe zone, by domestic animal species, has led to the need for local adaptation of pathogens and generally to expand of objects of their affection [2,3].Consequently, in large areas of zonal steppes, transformed into fields and pastures, function sources of pathogens with

the highest level of diversity of strains and their wide range of species sensitivity [6,8].The circulation of these pathogens in field habitats combines warm-blooded animals, ectoparasites and other vital forms of local biomes which are related by trophic relationships and stational links [1,7].

Particularly widespread in existing conditions acquired saprophytic pathogenic and saprotrophic mechanisms of zoonotic infections activation, which are associated with numerous outbreaks of different zoonoses. They have not only expanded their nizoral but actively circulate among wild, domestic and synanthropic animals, holding significant potential of danger. Among such nozoforms great difficulty for the region form listeriosis and erysipelas [7].

In terms of ecological and biological existence, recovery and circulation of agent (his life as a species) is within a certain territory, defined as the area of infectious center [3]. Herewith, this indicated territory is dangerous not so much due to active circulation of infectious factor, but due to loction of people or domestic animals here. Therefore, the aim is to develop criteria for ecological and epizootic evaluation of natural pastures for their safety in relation to sapronotic infections infections.

Materials and methods. In our study was necessitated by the use of various - general and special biological scientific research methods. Specification of this work included the special landscape, environmental, ecological and epizootic techniques, supported by periodic microbiological samples of soil, water, feed, sectional material, etc. These work are based on standard techniques of epizootic survey of areas, as reflected in the special instructions, guidelines and recommendations. Also, a significant amount of factual material was the retrospective data - reports, cartographic materials, journals of laboratory studies and numerous published data [4].

Results and discussion. In the first phase actual data were subjected to comparative analysis on the results of bacteriological control 1,417 different samples of material from searches of zoonotic erysipelas pathogen made during the 1971-2014 on the territory of Odessa region by Veterinary Service laboratories. Also we obtained the

results of similar studies in 2311 samples of material in laboratories of the Ministry of Health. Subjected to analysis exclusively results of research of samples and samples of materials with a clear focus, in their supporting documents, regarding researches on the causative agent of erysipelas. Undirected like that samples, which in the laboratories were subjected to scheduled and unscheduled control tests of sanitary focus to this sample are not included, which allows to eliminate the influence of random isolation of the pathogen. Data of analytic generalization of results are shown in Table 1.

Table 1

The results of investigation on various materials from zoonotic pathogen of erysipelas in the Odessa region (1971-2014) *

Type of material	Veterinary Services Laboratories			Ministry of Health Laboratory System		
	Total samples	seeded cultures	% of seeding	total samples	seeded cultures	% of seeding
Soil	82	2	2.4	26	2	7.7
Foods of plant origin	72	2	2.7	-	-	-
Foods of animal origin	38	9	23.7	-	-	-
Raw materials of animal origin	119	11	9.2	-	-	-
Sectional and pathological material from domestic animals	890	440	49.4	-	-	-
Intravital material from domestic animals	52	13	25.0	-	-	-
Material from wild and synanthropic rodents	19	1	5.3	841	14	1.6
Potential carriersy (ticks and fleas)	-	-	0	408	2	0.5
Sectional material from humans	-	-	-	21	1	4.7
Intravital material from humans	-	-	-	812	41	5.0
Food raw material and products	145	24	16.6	203	19	9.3
Total samples / Cultures	1417	502	35.4	2311	79	3.4

* Note: The results of the study of material samples with a clear focus on their exclusion of causative agent of erysipelas

The results (Table 1) clearly demonstrate the key features of laboratory control of Erysipelothrix insidiosa - Veterinary Services Laboratories as the main object of research have pathoanatomical (sectional) material, and laboratory systems of MH - intravital material from humans. Accordingly, laboratory control systems both exhibit the same main challenge to zoonotic erysipelas - diagnostics, confirming the primary focus of clinical diagnosis.

At the same time, the system of sanitary-epidemiological supervision, primarily by laboratories of specialized agencies (Anti-Plague Research Institute of Mechnikov, a number of NRI research institutes sanitary control of vehicles, Department of particularly dangerous infections of regional SES) is clearly monitoring natural sources of infection, and the volume of the environment control significantly exceeding the volume of diagnostic tests. The last is the most striking evidence of their preventative work and demonstration of a clear understanding of saprozoonotic causatives of human and domestic animal's diseases with zoonotic erysipelas. Unlike medical institutions, by laboratories of veterinary service, natural reservoirs, sources and factors of transmission of *Erysipelothrix insidiosa* almost not investigated and only a small number have been monitoring soil samples and feed. Last destined to control exclusively from farms and points where there have been outbreaks of erysipelas infection of pigs. Similar reasons led to the need for laboratory control of raw materials of animal origin that came from dangerous epizootic points.

It is significant that laboratories of both systems examined nearly the same amount of food samples, mostly targeting on their origin from dangerous on erysipelas points, and to exclude these products as a source of pathogens in the outbreak of sporadic / flare manifestations of infection in humans and domestic animals.

It is a natural phenomenon that different value of the isolates from different objects recorded by laboratories during the study period. So, if from pathological material of pigs and other domestic animals isolated 440 plants, representing 49.4%, in the same time, from the same material from human only one culture was isolated .

Obviously larger volume (41 Culture) isolated from in vivo material from humans, but in percentage terms it was only 5.0%, indicating a problematic orientation of etiological diagnosis with its overall clinical success. That is, the vast majority of isolates of *Erysipelothrix insidiosa* of domestic animals isolated from postmortem material and of people - from in vivo.

Regarding the main sources of infection, there is significant reliance of quantitative indicators of the pathogen isolation from specific objects of laboratory monitoring. That is clearly noticeable significant potential of natural hosts of the pathogen - eczanthropic and synanthropic rodents (and their ectoparasites), acting as universal source, for the domestic animals and humans, of *Erysipelothrix insidiosa.* These sources, in most cases may be determined as the primary.

Also, the second source infection, associated exclusively with domestic pigs and products of slaughter and processing. No doubt this same source has relationship secondary reservoir of the pathogen, which covers not only biotic objects (domestic pigs, facilities, soil, contamination of feed, etc.) as object of long term reservation, as which acts soil.

Conclusions

1. Our investigation demonstrate stable and clearly high potential of natural reservoirs and sources of *Erysipelothrix insidiosa*, directing medical and veterinary infection specialists in a more detailed study and tight control in the construction (development) of system for prevention and struggle with this dangerous infection.
2. An important conclusion from this material is also a fact, that currently retained its influence on the assessment of the situation on zoonotic erysipelas, system of departmental approach where for a single thing in it's nature, is carried out relevant multilateral control with the vertical reporting. This situation is not to the benefits of prevention and fight with this and any other zoonotic infections.
3. Moreover, the situation concerning the laboratory control, shows a completely different sectoral approaches to understanding of the essence of erysipelas infection as

zoonotic disease with clearly sapronotic type of spread, causing various estimates of epizootic / epidemic sources. Veterinary Service sees the problem only in enzootic circulation of the pathogen in pigs of individual farm that provides only vaccine based prevention on the base of directed pressure on this stock. Anti-epidemic service allows more attention to prophylaxis of the sources of infection, traditionally unfolding struggle with carriers (rodents) and rodent ticks and fleas.

Prospects for further research are to study the immediate environment, hostal dependencies and antigenic structure of field strains of *Erysipelothrix insidiosa* isolated from various sources. Establishing patterns of species distribution and antigen specific pathogen strains will help to understand the problematic phenomenon of saprozoonotic and enzootic circulation of these organisms, which are currently is most relevant in epizootology of zoonotic erysipelas.

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БАКТЕРІОЛОГІЧНИЙ КОНТРОЛЬ І РЕГУЛІРОВАННЯ *ERYSIPELOTHRIX INSIDIOSA В ОДЕСЬКІЙ ОБЛАСТІ*

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Анотація. *На основі дослідження закономірностей і місцевих особливостей структурно-функціональної організації різних типів центрів зоонозів бешихи, значно просунули розуміння по загальній екологічній та соціальній природі епізоотичного та епідемічного прояву цієї інфекції в регіоні. Відомча різноманітність контролю над епізоотичними і епідемічними аспектами етіологічно однієї нозоодиниці, чинять негативний вплив на успіх боротьби і профілактики зоонозних інфекцій.*

Ключові слова: *зоонози бешихи, паразитичні групи ценоза, природа вогнищевих інфекцій, зоонози інфекції, біобезпеки домашньої худоби*

БАКТЕРИОЛОГИЧЕСКИЙ КОНТРОЛЬ И РЕГУЛИРОВАНИЕ ERYSIPELOTHRIX INSIDIOSA В ОДЕССКОЙ ОБЛАСТИ

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Аннотация. *На основе исследования закономерностей и местных особенностей структурно-функциональной организации различных типов центров зоонозов рожи, значительно продвинули понимание по общей экологической и социальной природе эпизоотического и эпидемического проявления этой инфекции в регионе. Ведомственные разнообразие контроля над эпизоотическими и эпидемическими аспектами этиологически одной нозоединицы, оказывают негативное влияние на успех борьбы и профилактики зоонозных инфекций.*

Ключевые слова: *зоонозы бешыхи, паразитические группы ценоза, природа очаговых инфекций, зоонози инфекции, биобезопасности домашнего скота*