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Activity of Natural Tularemia Foci in West Ukraine

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Objective

Stady the activity of natural foci of tularemia and identify the main types of reservoirs and vectors of *Francisella tularensis*.

Introduction

Annually sporadic cases of tularemia in humans are registered in Ukraine and new enzootic areas are found. Monitoring of tularemia natural foci is important given the potential significant financial losses in case of tularemia outbreaks and taken into account that this pathogen can be used as a bioterrorist agent.

Methods

1. Light microscopy of smears of organs and tissues of animals, bacterial suspension (Gram staining) - the study of morphological and tinctorial properties of the pathogen.

2. Immunofluorescence method for detection of antibody (IFA) - detection of tularemia bacterial cells using specific fluorescent immunoglobulin.

3. Biological method - subcutaneous infection of laboratory animals (white mice) with material from environmental samples and bacterial suspension (for accumulation of tularemia agent in organs and tissues of laboratory animals).

4. Bacteriological method - inoculation of samples of wild and laboratory animals in differential diagnostic nutrient media (for isolation of a pure culture of tularemia agent).

5. Serological method:

- Indirect reaction of agglutination - detection of antibodies to tularemia agent in blood of humans, wild rodents (liquid tularemia antigen erythrocyte diagnostic agent).

- Indirect reaction of agglutination - detection of tularemia agent and its antigen in suspensions of organs, swabs of substrate from nests of rodents, pellets of birds (liquid tularemia immunoglobulin erythrocyte diagnostic agent).

- Reaction of agglutination - detection of tularemia agent and its antigen (dry tularemia diagnostic serum).

Results

Tularemia in Lviv oblast has been studied for more than 40 years, 69 enzootic localities in 14 administrative districts have been registered. More than 200 cultures of *Francisella tularensis* have been isolated, mostly from ticks (58.3%) and Myomorphic rodents (24.5%), the rest from water, straw, other rodents, and patients. In 2012-2015, 210 suspected patients were studied for tularemia, negative results were obtained. 22,320 ticks, 1,810 Myomorphic rodents, 282 water samples, 15 straw samples, and 3 bird nests were tested for tularemia. Tularemia cultures have not been isolated bacteriologically over the last few years. Pathogen circulation in natural foci was confirmed by immuno-serological studies of field material. Antibodies to the pathogen were detected in 6.5% out of 630 samples from Myomorphic rodents of seven species studied by Indirect Hemagglutination test. Most of the positive results were obtained from the samples of striped field mouse (46.3%), red-backed vole (17.0%), and common vole (14.6%). *Francisella tularensis* antigen was detected in 32 samples out of 14,600 ticks *D. reticulatus* collected in natural biotopes and in 8.9% out of 289 samples of pellet.

Conclusions

No incidence registered in Lviv oblast and difficulty of isolation of Francisella tularensis cultures over the last years in other oblasts (the last one happened in 2006) may indicate the decrease of foci activity under the influence of anthropogenic and environmental factors or changes in parasitic systems. But there are some evidence of agent circulation in the oblast, so some precautions should be taken, especially considering the fact that there have been no specific preventive measures taken over the last years.

Keywords

Francisella tularensis; tularemia; natural foci; ticks; rodents

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1.State Sanitary-Epidemiological Service of Ukraine
2.Biological Threat Reduction Program, Cooperative Biological Engagement Program (DoD Treat Reduction Agency, USA)
3.Epidemiology Department of O.O.Bogomolets National Medical University

References

1. Guidelines for Laboratory Diagnostic Techniques in Epizootologic Survey of Tularemia Natural Foci (No.28-6 / 23 dated 09/12/1983).
2. Guidelines for Search and Study of the Spread of Tularemia by Detecting Antigen of the Pathogen in Pellets of Birds and Droppings of Carnivorous Mammals (1973).
3. Practical Guide for Laboratory Diagnosis of Infectious Diseases, Moscow, Meditsina Shiko Publishing House, 2009.
4. UCDCM Information Sheet as of 07/21/2010 No. 04.4-31/40/868 On Epidemic and Epizootic Situation with Zoonotic Infections Common for Humans and Animals (Tularemia, Anthrax, Brucellosis, Ornithosis, Listeriosis) and Methods of their Prevention in Ukraine.

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