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**EPIDEMIOLOGICAL SURVEILLANCE OVER TICK-BORNE VIRAL ENCEPHALITIS IN ARKHANGELSK REGION**O.V. Sokolova<sup>1</sup>, I.K. Kovrov<sup>2</sup>, R.V. Buzinov<sup>1</sup><sup>1</sup>Rospotrebnadzor's Office for Arkhangelsk Region, Arkhangelsk, Russia; <sup>2</sup>Center for Hygiene and Epidemiology in Arkhangelsk Region, Arkhangelsk, Russia

In the areas with naturally occurring hot spots, the incidence of tick-borne infections (hereinafter, TBIs) represents one of the challenging issues of medical, social and economic nature. An infection among TBI which is most impactful in Arkhangelsk Region is tick-borne viral encephalitis (hereinafter, TBE).

The study sees its purpose as contributing to better epidemiological surveillance over TBE on the regional level, and is designed to analyze the contamination levels among ixodic mites using the PCR method.

The statistical data forms reported to the federal level, as well as of the studies into the contamination levels among ixodic mites were used for the analysis.

The study involved the analysis of TBI incidence in Arkhangelsk Region over the period from 2005 to 2017. It was found that the TBI incidence was exceeding the average score for Russia every year during the period analyzed (2.8-fold in 2017). The minimum level of TBI incidence was registered in 2017 — 3.6 per 100 000 residents, while the maximum one in 2009 — 9.9 per 100 000 residents. In 2017, the incidence rate of ixodic tick borreliosis (hereinafter, ITB) was 2.0 per 100 000 residents, which is 2.3 times lower than in Russia (4.6 per 100 000 residents). The contamination of mites with tick-borne encephalitis virus varied, during the period analyzed, between 3.4 and 16.8%, the average rate being 7.4%.

For the purposes of epidemiological surveillance over TBIs in Arkhangelsk Region, the molecular genetic method (real-time PCR) has been in use since 2012. The PCR-based studies conducted in 2016 to 2018, have found that the TBIs contamination rates among the ticks occurring in natural biotopes and removed from people, were as follows: TBE — 3.8%, ITB — 26.1%, HME — 2.7%, and HGA (not detected).

The application of molecular genetic methods in studying the contamination levels among ticks has enabled an increase in the range of microorganisms detectable in biological material, and has led to better awareness of TBE, ITB, and HME contamination levels among ticks, which, in turn, is essential to quality epidemiological surveillance, TBIs prevalence risk assessment and forecasting, and preventive interventions planning.

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**IMMUNOLOGICAL SCREENING OF LEPTOSPIROSIS IN DOGS IN ST. PETERSBURG**

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Leptospirosis is an acute infectious disease classified with zoonoses. It is a ubiquitous disease with severe clinical course, and with high lethality exceeding 20% for some etiologic forms. In urban areas domestic dogs proved to be one of the main source of this infection. The epidemiological well-being of the urban environment depends largely on epizootic processes taking place in the population of those animals.

The study objective was to conduct immunological screening of leptospirosis in dogs in St. Petersburg in order to identify their epidemiological danger for city residents.

In 2012–2017 we examined sera sampled from 720 domestic dogs in St. Petersburg. A standard technique was applied to detect the antibodies to leptospirae in the microagglutination reaction with a set of reference strains of living leptospira belonging to 12 serological groups.

In 165 samples (22.9%) we detected specific antibodies to leptospirae belonging to 3 serological groups: *Icterohaemorrhagiae* (49.7%), *Canicola* (43.0%), *Grippityphosa* (7.3%). 60.0% of samples contained antibodies at a titer of 1:200–1:400, while 40.0% of our samples contained antibodies at a titer of 1:800 and higher. The seropositive animals were male (69.7%) and female (30.3%). The dogs got infected in some pet relief areas, often in a city park or square (67.0%), when swimming in urban and suburban water bodies (15.0%), or in unknown places (18.0%). The tendency towards the prevalence of *Icterohaemorrhagiae* serogroup in dogs' leptospirosis etiology, revealed at the turn of the century, is found to persist. The presence of antibodies to leptospira in the sera of domestic animals points to their infection with this pathogen and therefore to the existence of potentially dangerous source of this disease in St. Petersburg.

Active anthroponotic foci of leptospirosis exist within the limits of St. Petersburg city in the immediate environment of citizens, and domestic dogs are one of the sources of this infection. What gives rise to concerns is the fact that dogs are infected with *Icterohaemorrhagiae* and *Canicola* leptospira serogroups, that cause the most serious diseases in humans.

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**A SURVEY ON CASES OF TICK BORNE ENCEPHALITIS IN ST. PETERSBURG**E.A. Suzumova<sup>1</sup>, N.K. Tokarevich<sup>1</sup>, N.A. Stoyanova<sup>1</sup>, O.V. Blinova<sup>1</sup>, N.V. Telnova<sup>2</sup>, A.O. Shapar<sup>3</sup>, B.I. Aslanov<sup>4</sup><sup>1</sup>St. Petersburg Pasteur Institute, St. Petersburg, Russia; <sup>2</sup>Directorate of Rospotrebnadzor in St. Petersburg; <sup>3</sup>Centre of Hygiene and Epidemiology in St. Petersburg; <sup>4</sup>North-Western State Medical University named after I.I. Mechnikov, St. Petersburg, Russia

The study objective was to bring to light the current environmental and epidemiological specificity of tick borne encephalitis (TBE) in St. Petersburg.

We analyzed the data on TBE incidence in St Petersburg published in “Data on infectious and parasitic diseases” (State Statistical Reporting, Form #2), FGBUZ “Federal Centre of Hygiene and Epidemiology of the Rospotrebnadzor”, and those reported by Parasitology Department of FBUZ “Centre of hygiene and epidemiology in St. Petersburg” in 1996–2016.

It is found that people in St. Petersburg are at risk of exposure to tick bites, and of TBE infection acquire not only outside of the city, but also in the territory of their megapolis. Every year about 1000 humans are bitten by ticks in St. Petersburg.

*I. persulcatus* and *I. ricinus* are two main vectors of TBE virus, and the former dominates. The average TBE virus prevalence in flagged ticks is 0.61%.

There is a rise in number of medical care encounters related to tick bites in St. Petersburg. Thus, the tick-bite incidence rate (number of cases per 100 000 of inhabitants) increased from 141.9 in 1996–2002 to 288.9 in 2010–2016. Meanwhile, TBE incidence rate tends to go down both in St. Petersburg and countrywide. For instance, in St. Petersburg the average TBE incidence rate (number of cases per 100 000 of inhabitants) was 1.66 in 1996–2002, but dropped to 1.17 in 2010–2016. The maximal TBE incidence rate in St. Petersburg is reported in children (3–6 and 7–14 year old).