

MODERN FEATURES OF EPIZOOTOLOGY AND EPIDEMIOLOGY RABIES INFECTION

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✓ Resume

There are given results of modern epidemiological and epizootological characteristics of Rabies in Uzbekistan. As revealed, range of infecting and unhealthy points spreaded unequally by regions. It was high in Tashkentcity, Samarkand, Kashkadarya, Tashkent region and Karakalpagistan Republic.

Key words: rabis infection, hydrophobia, epizootiology, epidemiology

СОВРЕМЕННЫЕ ОСОБЕННОСТИ ЭПИЗООТОЛОГИИ И ЭПИДЕМИОЛОГИИ БЕШЕНСТВА

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✓ Резюме

Приведены результаты анализа изучения современных эпидемиологических и эпизоотологических характеристик бешенства в Узбекистане. Отмечено, неравномерное распределение уровня заболеваемости бешенством и числа неблагополучных по бешенству пунктов. Эпидемиологические наиболее неблагополучными регионами являются г. Ташкент, Самаркандская, Кашкадарьинская, Ташкентская области и Республика Каракалпакстан.

Ключевые слова: бешенство, гидрофобия, эпизоотология, эпидемиология

ҚУТУРИШ ЭПИЗООТОЛОГИЯСИ ВА ЭПИДЕМИОЛОГИЯСИНИНГ ЗАМОНАВИЙ ХУСУСИЯТЛАРИ

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✓ Резюме

Ўзбекистонда қутуришнинг замонавий эпидемиологик ва эпизоотологик хусусиятларининг натижалари келтирилган. Тадқиқот натижаларига кўра, республикамиз вилоятларида касалланиш даражасини нотекис тарқалганлигини кўрсатди. Тошент шаҳри, Самарқанд, Қашқадарё, Тошкент вилоятлари ва Қорақалпоғистон Республикаси эпидемик даражаси юқори ҳудудларга киритилди.

Калит сўзлар: қутуриш, гидрофобия, эпизоотология, эпидемиология

Relevance

Rabies is a viral encephalitis with the highest mortality rate of any infectious disease. The pathogens belong to the Lyssavirus family, which is closely related in genome structure and phylogeny. In recent years, new genetically independent lyssaviruses have been identified: Aravan (ARAV), Khujand (KNUV), Western Caucasus (WCBV), Irkut (IRKV), Lleid (LLBV)

and Africa (Ikoma (IKOV)) in the Eurasian region., but their epidemiological significance in the transmission of diseases is not fully understood [1,2].

Rabies exists as two epidemiological types: the urban type of rabies is spread by unvaccinated domestic animals, dogs and cats, and the natural

type is spread mainly by wild animals - foxes, wolves, bats, rodents and other animals [3,4].

The susceptibility of all types of domestic and wild animals to diseases, their extreme danger to humans determine the social and economic significance of rabies and attract the attention of veterinary, medical science and practice [5,6]. Despite the fact that rabies has been closely monitored by researchers for a fairly long period of time and significant progress has been made in the study of its nature over the past decade, it still remains a serious problem for many countries of the world.

According to the World Health Organization (WHO, 2010), rabies is still one of the most dangerous infectious diseases, in 85 countries of the world more than 3 billion people are at high risk of contracting rabies, and 50,000 to 55,000 people die each year. In a world 8 million people are treated with post-exposure therapy (PED). Of these, 35,000-45,000 (over 90%) are in the Asian continent, mainly in India. (WHO, 2013). Child mortality is 30-50% of the total. In addition, due to the high cost of such measures as post-exposure treatment, diagnostic and epidemiological surveillance of humans, vaccination of domestic animals and management of wildlife populations, rabies is a serious economic loss for many countries of the world [5,6,7]. JSST (2009) reports that rabies ranks fifth among infectious diseases in terms of economic damage [7].

The polymorphic parasitic system is unique to survival theory based on modern ecological concepts. The rabies virus (rabies virus) is found almost everywhere in the wild. The main host in the circulatory system of the pathogen is the participation of wild carnivores: the red fox (*Vulpes vulpes*) in Europe, the arctic fox (*Alopex lagopus*) as the main source in the northern regions; Potential new sources in Europe are amphibians - hematophages - vampires - nocturnal mountain lizards (*Eptesicus serotinus*) or city dogs (*Canis familiaris*) [7,8,9]. In all cases of rabies in non-carnivores and humans, the infectious disease has a biologically "closed street" [8].

The risk of this zoonotic disease to humans and animals has not decreased, and in recent years it has become more common in wild and domestic populations in various geographic areas. Worldwide, rabies kills more than 2 million animals per year [8,9]. Active human intervention in the development of natural resources, the development of agriculture and the process of urbanization have made significant changes in the

area of natural foci of infectious diseases, the composition and number of animal species involved in epizootics. These processes lead to qualitative changes in natural and anthropogenic foci of the disease, which in turn affects the modern epidemiological and epizootic characteristics of rabies.

Wild animals are the main source of rabies infection. According to [10,11], in the last decade, the source of the pathogen in many economically developed countries was mainly foxes, and rabies among foxes' spreads from the central part of the European continent [9,10].

Today, the region with the highest rates of rabies among the so-called "super reality" foxes in central Europe stretching from the Baltic Sea coast up to Yugoslavia and Bulgaria, the length of 2000 km and 400 km wide (mainly Poland, Slovakia and Hungary) [9, 10,11].

The epizootological situation in the "super real" and adjacent territories is characterized by the following indicators: in 2002, 10 051 cases of rabies were registered in Europe, of which 809 were in Belarus, 1549 were in Ukraine, 1854 were in the Baltic States, and 3089 were in Russia. ; Of the 2501 cases (24.9%) observed in the rest of Europe (excluding Turkey), 113 were reported in Slovakia, 160 in Hungary, 501 in Croatia and 1,188 in Poland (78.4%).

The current situation with rabies infection in the Americas is very complex and constantly changing. Rabies epizootics are mainly observed among raccoons, foxes, lizards and coyotes. In the United States, bats play an important role in the transmission of rabies.

In recent years, the United States has seen an increase in rabies epizootics among raccoons. In 2005, there were 7,881 cases of rabies in animals in the United States, according to the CDC, of which 92% were naturally occurring rabies, of which 50% were in raccoons. In 2007, the incidence of rabies in the United States increased by 19.4% compared to 2006. Epizootics among raccoons continued to expand, with epizootics reaching 19 states and the District of Columbia to date. There is also an increase in the incidence of rabies in bats (an increase of 29.3% compared to 2006) [11]. Currently, the most difficult rabies situation in the world remains in Asia, where dogs are the main source of rabies. In Asia, rabies is the most common cause of death in the world. The annual death rate in Asia is about 40,000, the majority of whom are in India [11,12]. When 869 animal-injured patients were analyzed, the proportion of cows, horses, pigs, camels and monkeys, other than dogs and cats, among people bitten by humans increased. In fact, these animals can also carry rabies infection [12].

Epizootic among dogs persists in a number of countries in Asia, Africa and Latin America. According to the World Health Organization (WHO, 2002), rabies virus is still present in dogs in more than 80 countries around the world. In these countries, more than 4 million people are exposed to rabies protection every year, and more than 30,000 people die from dog bites.

In Latin America, 70% of animals infected with rabies are dogs. Canine rabies is prevalent in Argentina, Bolivia, Brazil, Venezuela, Guatemala, Honduras, Costa Rica and Chile. Between 2009 and 2011, 3,500 people sought medical attention for animal bites in São Bernardo do Campo, Brazil. Of these, 87.6% are bites, 4.5% are cats and 7.9% are injuries from other animals [12].

On the African continent, rabies infection is especially common in the northern, western and central regions. In countries such as Algeria, Egypt, Mauritania, Morocco, Mali, Nigeria and South Africa, dog bites accounted for more than 80% of local population access to rabies care. For example, in the city of Bangui (JAR) in 2009, rabies virus was isolated from 62 dogs, and 1,320 people reported an outbreak of rabies due to dog bites [11,12].

In the past, China was a country with a high incidence of rabies. An estimated 108,412 people died of rabies in China between 1950 and 2004. Outbreaks of rabies in this condition recur every 10 years due to the increasing population of dogs and extremely low rates of vaccination against them (Wu X. et al. 2009).

Currently, the rabies situation in the Commonwealth of Independent States (CIS) is described as a natural epizootic. New foci of rabies infection have arisen due to the increased migration of wild animals. Russia, Ukraine, Belarus, Kazakhstan, Kyrgyzstan and Uzbekistan are currently involved in natural rabies epizootics [11,12].

In Central Asia and the Caucasus, as well as in the southern regions of Kazakhstan, along with natural foci, anthropogenic foci of canine rabies have been identified [13].

Every year in the Russian Federation, the veterinary service detects rabies in 3-5 thousand animals. In addition, more than 15,000 foxes, wolves, raccoon dogs and other predators die in natural foci of infection without any fear. Every year more than 400,000 people in the country need rabies vaccination due to animal injuries [12,13].

Foxes remain the main source of the virus in almost all affected areas of the country, accounting for 90% of wildlife rabies cases in 2009. In 2008, 85 epizootic foci, 1168 cases of disease and death of animals were registered on the territory of the Russian Federation. Apparently, outbreaks are

concentrated in the Urals, the Volga region and the Central Black Earth region. In 2009, the number of epizootic outbreaks in these epidermarkets increased to 1240, and the incidence - to 1879. In 2010, there was a decrease in rabies epizootics in the Volga and Urals regions, which is associated with a three-year frequency of natural epizootics [13].

According to industry experts, 26 people were diagnosed with rabies in the Russian Federation in 2005–2007, and between 2,000 and 5,000 cases of rabies were reported among wild and domestic animals. Since the infection is widespread, it is a serious problem for the country's health system [13].

Large stationary furnaces are being formed in southwestern Russia. Over a 25-year period (1992–2017), 163 laboratory-confirmed foxes were registered in the Moscow region of the Russian Federation, which indicates the superiority of the epizootic significance of these animals.

The incidence of farm animals in 2006–2011 It was 740 cases, in 2012 - 401, in 2014 - 298 cases.

The high incidence of persistent diseases in animals and the increase in the number of people seeking help for rabies control indicate that inadequate organizational and preventive measures against this very dangerous zoonosis are not being taken properly.

According to many authors [14], 2008–2011. In the Russian Federation, there is a very difficult situation with rabies among animals. In recent years, the number of outbreaks of unhealthy rabies has increased significantly. In 2012 alone, the incidence of rabies among animals in the Moscow region increased from 240 to 253. According to the authors, in 2008–2012, 6 people died from rabies in the Moscow region.

The epizootic situation in the republics of Buryatia and Tyva is of particular interest. For example, in the Republic of Buryatia, where rabies has not been observed at all since 1981, 13 cases of wild and domestic diseases were registered in 2011. In February 2012, 5 cases of the disease were detected among cattle. It was found that the isolated virus isolates are genetically related to the Mongol strains, which, in turn, indicates that the virus was introduced from Mongolia by wild animals [14].

In the Ural region of the Russian Federation, especially in the districts of the Orenburg region bordering Kazakhstan, natural rabies is widespread, mainly in foxes and corsacs. The epizootic and epidemiological situation of rabies is deteriorating in the Russian Republic of Bashkortostan. For example, from 1992 to 2006, 850 cases of wildlife diseases were identified in the country. While foxes, raccoon dogs, wolves, badgers and corsacs were most commonly involved in rabies epizootics, foxes were the main

source of the rabies virus [41; with. 98-100]. In Belarus, carriers of the disease are mainly wild animals, which account for 49.8% of all reported cases of rabies. Of these, 86.8% were foxes, 13.2% were raccoon dogs, as well as wolves and badgers [14].

Along with the republics of the Caucasus, an increase in the incidence of rabies was observed in the republics of Central Asia and the Republic of Kazakhstan, which accounted for from 41% to 53% of all registered cases.

Natural outbreaks of rabies, mainly among foxes and stray dogs, have been reported in the Chita region of Russia, Eastern Siberia and the Far East [14], in Uzbekistan, Tajikistan and Turkmenistan, but anthropogenic outbreaks remain active in the Central Asian republics.

In recent years, the incidence of rabies among the residents of Kazakhstan in the Central Asian republics has been growing due to an increase in epizootics of wild, agricultural and domestic animals. In the South Kazakhstan region, 65% of all cases registered in the Republic of Kazakhstan over the past 7 years were registered [16]. According to other sources, more than 40,000 animal bite victims seek rabies treatment annually, with 54 deaths from rabies between 1994 and 2000. In 2000-2005, 14 cases of the disease were detected in humans, and in 2006-2013 - 60 cases. According to the authors, 65% of cases occurred in the South Kazakhstan region. The growth of rabies among wild animals and the spread of stray dogs and cats in settlements led to a sharp deterioration in the situation [16].

The latest scientific research on rabies in the Republic of Uzbekistan was carried out in the late 90s of the last century. It was between 1994 and 2000, when R. While Sultanov studied the modern features of the organization of medical care for rabies in 1985-1994 and the state of epidemiological control, U.M. Usmanov (2001) in the field of social hygiene conducted a study of the socio-economic aspects of the epidemic process in rabies and the coordination of measures to combat it (on the example of the city of Tashkent and the Tashkent region) [13, 17]. After 1996, this topic was not considered at all in the field of epidemiology.

According to available data, the incidence of rabies in large horned animals and dogs in the Republic of Uzbekistan is mainly recorded in mountainous, foothill, semi-desert regions and reed thickets [13, 17]. In the population of foxes living on the territory of the republic, there is a constant increase in the incidence once every 3-4 years. Rabies was found in 18 species of wild mammals - 7 species in predators, 8 species in rodents and 3 species in bats. The intensification of rabies epizootic in gray rats in some areas has led

to an increase in morbidity among large horned animals. In recent years, there has been an increase in natural rabies foci. Against this background, the formation of anthropogenic foci, supported by dogs and cats, is associated with the impact of the growing process of urbanization. [17].

V. P. According to Sergius, the experience of the developed capitals and cities today, shows the need to ensure the removal of homeless and stray dogs in the cities [18]. Cats are also involved in the cycle of infectious diseases only sporadically, do not participate in the circulation of the pathogen, serve as a biological "closed street" and have a low epidemiological significance. However, among other animals prone to the disease, cats are the second most important risk group after dogs.

In turn, in the republics of Central Asia, the main disease occurs in certain regions. For example, in Uzbekistan, the highest rates of human rabies are in the Kashkadarya region and Karakalpakstan; In Kyrgyzstan - in the Osh region; In Tajikistan - in the Kurgan-Tepe region; In Kazakhstan, it was recorded in the South Kazakhstan region. An acute rabies epidemiological situation has been reported in neighboring Tajikistan. For example, in 2004 there were 15 patients in the republic, and in 2005 - 12 (0.2 per 100 thousand of the population) [18, 19].

According to the data, in 1991-2002, 329 cases of human infection were registered on the territory of the Republic of Uzbekistan. According to the authors, most of them are epidemiologically unfavorable territories for rabies - Samarkand, Kashkadarya, Surkhandarya, Jizzakh, Tashkent regions and the Republic of Karakalpakstan.

The main reason people get rabies is because they do not have enough information about the high risk of contracting the disease after animal injuries and that the disease always ends in tragedy.

One of the reasons for which rabies is still endemic in many parts of the world, lies in the fact that the majority of wild and domestic animals are infected with the rabies virus. The spread of rabies infection is also influenced by its constant transformation.

It should be noted that over the past almost 20 years, scientific research on the epidemiology of rabies in the Republic of Uzbekistan has not been carried out, and the epizootological and epidemiological analysis of the disease has no scientific basis.

Economic problems impede effective rabies control in almost all countries, including Uzbekistan, but there are also a number of scientific problems that need to be addressed in the near future. First of all, it is the development of cheap and effective vaccines for the successful fight

against rabies not only in domestic animals, but also in wild animals. There is also a need to better understand the mechanism by which different strains of rabies virus spread and survive in different animal populations.

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