Educator Insights: A Journal of Teaching Theory and Practice
Volume 01, Issue 04, April, 2025
brightmindpublishing.com
ISSN (E): 3061-6964

RABIES EPISODE AND CONTROL MEASURES

1T. Gaznakulov
PhD, Senior Researcher

2 M. Allamurodova - PhD

1 A. Khushnazarov – PhD

2 G. Urinova
Independent Researcher

1Scientific- Research Institute of Veterinary
2 Samarkand Regional State Center for Animal
Disease Diagnosis and Food Safety

Abstract:
This article describes the diagnostic examination of animal heads brought for examination with suspicion of rabies at the Virology Laboratory of the Samarkand Regional State Center for the Prevention and Control of Rabies, and the fact that dogs are the main cause of the spread of these diseases.

Keywords: Animals, rabies, virus, diagnostic, pathological specimen, brain, luminescent, microscopy, bioassay, white mice.

Introduction

Relevance of the topic. The development of animal husbandry in providing our people with high-quality food products is hindered by extremely dangerous infectious diseases that occur among animals. Among the infectious diseases of agricultural animals, rabies has always been a pressing problem for medical and veterinary specialists.

All warm-blooded animals and humans are susceptible to the disease. Wild carnivores and rodents ensure the stability of the disease virus in nature. Therefore, the complete elimination of rabies is a major problem.

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Rabies affects all types of agricultural animals, as well as predators and carnivores of the animal world, as well as humans. Affected animals and people die as a result of tragic consequences.

There is no exact information about when and where rabies appeared. However, according to scientific sources, oriental healers encountered this disease in humans and animals 3000 years before our era. Much research has been conducted on the development of measures to combat rabies and methods of treatment, which have a long history, and research in this direction is ongoing. However, the drugs created as a result of this research serve only to prevent the disease.

Thus, the prevention of rabies in humans and animals and the treatment of the disease remain relevant.

In order to treat sick animals and prevent the disease, it is first necessary to have a thorough knowledge of its epizootological processes. Because without knowing where and in which animals the "field" rabies virus is found, and without having an idea of how this virus circulates in nature, the applied countermeasures will not give good results.

In recent years, according to many years of observations by scientists in this field, it has been proven that the main source of rabies is wild animals in nature (foxes, wolves, jackals and wild cats). In fact, wild animals are constantly activating the disease virus (causing agent) to each other as a natural source.

They then transmit this virus to farm animals and dogs. The chain of epizootological process continues in this way. In such conditions, it is difficult to fight the disease without reducing the activity of the first source. Because in the process of disease reproduction, first of all, weather, climate change, drought, areas with humid climate (rivers and lakes, water reservoirs) serve as natural foci. As a result, the disease spreads both in the area where it was not observed, and among domestic animals and dogs in nearby residential areas.

Secondly, in nature, an excessive increase in the number of dominant species due to competition between wild animal species also leads to an increase in the disease. For example, currently, due to a decrease in the number of wolves, foxes and jackals are increasing. Therefore, most of the pathological specimens examined are foxes and jackals. An increase in the activity of the first source in nature, in turn, leads to an increase in the second source of the disease among domestic animals.

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Thirdly, the large-scale development of protected areas in our republic over the past 20-25 years has led to a number of negative consequences from a medical and veterinary point of view. This can be explained as follows: due to the development of lands located near the slopes of the mountains and in the foothills and steppe zones, the population has also settled in these areas, and farm buildings have been built on the slopes of the mountains. As a result, wild animals that used to live in a large area have been concentrated in one zone. This further increases the activity of the natural source and leads to the emergence, spread and multiplication of the disease in closely located farms and farms.

Fourthly, given its biological characteristics, the rabies virus circulates in natural sources depending on the type of animal that is the main host. Some species of animals serve as a link in the epizootic process. Because the virus adapts in the organism of that animal. Such animals, which are considered the main hosts of the virus, include wild animals (wolves, foxes, jackals). Some species of animals, however, are considered non-main hosts for the virus and do not participate in the epizootic chain. However, the virus can persist in their bodies. Such animals include many species of rodents.

The continuous activity of natural sources also depends on the level of susceptibility of animal species to this virus. Our many years of scientific research have shown that the level of susceptibility to the rabies virus varies among different species of animals. For example, it varies as follows:

Highly susceptible animals: foxes, jackals, field mice, common field mice, gerbils and laboratory white mice. Susceptible animals: domestic cats, rabbits, bats, some species of rodents.

Moderately susceptible: humans, dogs, sheep, goats, large horned animals, donkeys and horses.

The causative agent of the disease is a neurotropic filterable RNA virus belonging to the Rhabdovirus family. It is found in the largest quantities in the brain of a sick animal, as well as in the spinal cord, salivary glands and saliva. Animals are infected only through a wound from a rabid animal bite, the virus is transmitted to a healthy animal through saliva, causing the disease. It was found that not all bitten animals become infected. This depends on the virulence of the virus that enters the body through saliva, its titer, the site of entry of the virus, i.e., proximity to the brain, the nature of the injury, the type, resistance, and age of the animal.

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Research materials and methods. For many years (2010-2024), in 14 districts and 2 cities of the Samarkand region, according to the current "GOST 26075-2013" standard, mainly dogs (96%) that inflicted injuries on humans and animals, other types of animals, the animal owner or the dog handling team must immediately bring them to the regional veterinary department and be placed under 10-day observation. In some cases, with the permission of the veterinarian, it is allowed to keep the injured animal at the owner's home (in a separate isolation area, with the owner's permission). Animals that were killed by beating, strangulation or other causes during the 10-day control period or during the bite, the heads of large animals, small animals such as cats, rodents (rats, voles, mice, hamsters, etc.) along with their entire bodies are brought to the Virology Department of the regional laboratory by a veterinary specialist with a sealed referral signed by the veterinarian of the territorial veterinary station in accordance with the current "GOST 26075-2013" standard. Humans and animals are mainly injured by dogs. Domestic animals bite cloven-hoofed cattle, horses, donkeys, sheep and goats, and others. When bitten by unattended rabid dogs, signs of rabies appear after a certain time. Saliva flows from the mouth, the animal stops eating, the tongue is exposed, the veterinarian is consulted, the animal is treated, the medicine is given, the animal is in contact with the animal, and finally the animal dies from paralysis of the lower jaw, without being able to eat or swallow.

Research Results

Initial samples from animals suspected of having rabies were examined in the laboratory using the methods specified in the current "GOST 26075-2013" standard. In this case, the brain is split open, the cerebral cortex and cerebellum are opened together, the head is thrown into a special oven (crematory) and burned. A 10% suspension is prepared from the brain in a test tube for luminescent, light microscope smear and bioassay, and in the second test tube, pieces taken from different parts of the brain are stored in 50% glycerin for 3-6 months (until the final diagnosis is made).

For examination under a light microscope, the prepared smear is fixed in alcohol-ether for 4-8 hours on a slide. It is removed from it, stained using special methods and examined under a light microscope. If Babesh-Negri bodies are detected during microscopy, rabies is confirmed. For a fluorescent microscope, the smear is fixed in acetone for 4-8 hours, DAFI is added, and when viewed under a

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fluorescent microscope according to the instructions, preparations containing rabies virus antigens of various sizes and shapes are observed under the influence of green-violet light. Their size can be barely visible, up to 15-20 microns. The granules can be round, oval, and other shapes. The examination period under a light and fluorescent microscope is 1 day. If during the examination of a biological sample (bioassay) no Babesh-Negri bodies are found in them or non-living granules are observed, then a bioassay is performed on albino mice (4-6 heads). 0.03 g of suspension is injected into the mouse brain and observed for 30 days. The experimental white mice are placed in special cages or aquariums. The day, time of the experiment, and the number of infected mice are recorded. After 14-20 (sometimes more) days, the infected mice begin to develop a paralytic form of rabies, bite each other, and may eat each other. The cranial cavity of dead and infected mice is opened, the brain is removed, a smear is prepared, and examined under a microscope (Table 1).

Table 1 laboratory diagnostic methods

Microscopic	Serological	Biosynov
A smear is prepared and stained from various parts of the brain (hemispheres, cerebellum, ammonal horns). (according to the Muromtsev method)	Reaction immunofluorescence	White mice infestation with a 10% suspension

Out of 29 patmaterials tested in the virology laboratory of the Samarkand Regional State Center for Animal Disease Diagnosis and Food Safety, no positive results were recorded in 2017. Over the years, 3 out of 66 patmaterials were positive in 2010, and 1 out of 47 patmaterials in 2018. The decrease in the number of positive results in recent years indicates that rabies vaccination and control measures are well established and implemented in a timely manner in the region (Table 2).

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Table 2 Information on rabies detected in samples submitted to the virology laboratory in 2010-2024

Years	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
A feather sample sent to Lab	66	65	56	47	40	32	45	29	59	61	17	20	42	59	50
A positive result was obtained	3	3	3	1	1	1	1	-	1	1	-	-	-	2	2

Conclusion

Only if this responsible work is actively carried out not only by veterinary and medical workers, but also by the heads of all enterprises and organizations, farms, village and mahalla committees, and internal affairs bodies, with the close cooperation and assistance of all, will the effectiveness of the measures taken increase and the incidence of rabies sharply decrease.

The restriction on rabies imposed on a farm or settlement will be lifted by the decision of the khokim, based on the written recommendation of the chief veterinary doctor, two months after the last case of the disease has passed, and after the implementation of health measures in accordance with the current guidelines.

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