

SOME INDICES REGARDING OF THE EPIDEMIOLOGICAL SITUATION AND MEASURES OF PROPHYLAXY OF RABIES ON THE REPUBLIC OF MOLDOVA

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Abstract

The study aimed to analyze the epidemiological situation regarding rabies in the Republic of Moldova from 2010 to 2020. The obtained results showed that in the Republic of Moldova rabies evolves endemic, and the annual number of rabies cases in animals has dragging variations with value reaching incidences from 58 cases (2011) to 167 cases (2015), being characterized with successive waves of increasing the number of sick animals with a periodicity of 2 to 3 years. The presented data also showed a correlation of the increase of the number of rabies cases in domestic animals in accordance with the number of cases of rabies in wildlife (in foxes). The highest share of rabies in animals was recorded in foxes; these animals are being considered the main factor in the spread of the disease. The annually incidence of rabies in foxes ranged from 14 to 32 sick animals as confirmed by laboratory investigations, which represented from 15.4% to 23.2% of the total number of confirmed rabies annually. The measures that have been taken to prevent rabies in animals at national level do not ensure the definitive elimination of rabies. Therefore, a broader analysis of all the factors that maintain the infection both in wild species as well as domestic animals has to be performed, in order to take concrete actions and measures that would lead to the eradication of disease cases. Meanwhile, it is crucial to continue applying the general sanitary veterinary measures that focused on providing immunological coverage to all domestic carnivores as well as to the wild fauna where foxes represent the main vector of spreading rabies.

INTRODUCTION

Rabies is a zoonosis of virotic origin that has the highest lethality rate in both animals and humans infected with the rabies virus. Notifications of the incidence of disease annually come from more than 150 countries around the world, and the number of deaths due to rabies is over 50,000 people annually. At the same time, the number of people vaccinated due to bites caused by sick or suspected animals infected with rabies virus exceeds 15 millions of persons every year. The rabies virus particularly affects the central nervous system (brain and spinal cord). It occurs rarely in vaccinated pets, but can be easily contracted if an unvaccinated pet comes in contact with another sick or wild animal and is bitten or scratched by it. Humans can be contaminated by bites, produced from both contaminated domestic and wild animals.

The main reservoir of the rabies virus is the wildlife, being mainly represented by the fox. Contaminated foxes, depending on the stage of the disease change their behavior. The lack of fear, which is a characteristic of wild animals, is one of the most common behavioral changes that can be noted. Consequently, foxes enter in localities and in animal shelters during the day and allow humans to approach them. Moreover, without becoming aggressive they bite animals and humans and have a fixed gaze sometimes with insecure gait followed by paralysis and death.

Another important source of the disease as well as a potential reservoir of the virus represent the stray dogs in urban areas that bite humans and various species of animals. However, the measures taken to reduce their number and expose them to prophylactic vaccinations are evolving slow and require additional financing sources. Currently allocated resource cover only a very small percentage of these financial needs. Given the important social and economic impact of rabies, the disease is constantly monitored by the veterinary service and is being included in the plan of strategic veterinary sanitary measures in the republic which provides concrete measures regarding surveillance, prevention and control of the disease in susceptible animals and assures the population protection from contamination.

In view of the above factors, the proposed study was to provide an analysis of the epidemiological situation against rabies in the Republic of Moldova as well as to analyze the effectiveness of prophylactic measures for rabies in wildlife and domestic animals.

MATERIAL AND METHOD

The research was conducted in the period starting from 2010 till 2020 during which extensive epidemiological data studies and analysis were performed on the incidence of rabies in domestic animals and wildlife in the Republic of Moldova.

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Clinical cases of rabies in domestic animals with rabies were examined, as well as cases of rabies in wild animals were recorded and investigated. Nonetheless, in case of suspicions of rabies, to confirm the diagnosis, samples of pathological material (animal head) were sent to the national reference laboratory Public Institution Republican Center for Veterinary Diagnosis.

The confirmation of the diagnosis was made by direct immunofluorescence examination on hippocampus, cerebellum and medulla oblongata fingerprints, stained with specific fluorescent conjugate (Lyophilized, adsorbed anti-rabies nucleocapsid conjugate) for testing for Lysavirus Genotype 3 (Mokola virus) nucleocapsides (Mokola virus), 5 Lyssavirus, EBLV 1) and 6 (EBLV 2), manufacturer of "BIO-RAD", France. The direct immunofluorescence test (IFD) was subsequently completed with the histopathological examination that reveals the presence of Babes-Negri corpuscles in the examined histological sections.

RESULTS AND DISCUSSIONS

The Republic of Moldova is one of the countries in the European countries region which has a comparatively high number of rabies cases. In addition to the considerable economic losses, rabies is also a social disease (a zoonosis) with a lethality rate of almost 100% for humans and animals. The results of the official registration of the epizootiological situation of rabies in the Republic of Moldova date back to 1952. From 1952 to the present, rabies remains an endemic zoonosis in the territory of the Republic of Moldova with a different incidence of disease; having a higher frequency in wild animals, mainly represented by the fox. The study results come with an analysis of rabies cases in the Republic of Moldova over a period of ten years.

Figure 1 shows the dynamics and incidence of rabies. Based on the data shown in the graph, 111 official cases of rabies were registered in 2010; followed by a decrease in the number of cases to 58 in 2011. An increased tendency in the number of rabies cases can be seen in the years between 2012 and 2015 with the highest number of cases, 184, being registered in 2012 followed by 113, 138 and respectively 167 in the next years. Starting with 2016, the number of cases decreased with an index of 79 rabies cases in 2016, 59 cases in 2017, 78 in 2018 and 91 cases in 2019. In 2020 the number of rabies cases increased to 121.

The data gathered from the laboratory results obtained in the period 2010 to 2020 was used to analyze the role of wildlife, especially foxes, in maintaining and spreading cases of

rabies in domestic animals. The results of this study are presented in the figure 2. Analyzing these data we see that the number of rabies cases in foxes out of the total number of rabies cases in animals was fluctuating over the period; ranging from 14 cases which represent 15.4 % of the total number of 91 cases in 2019 to 32 cases which represent 23.2% of the total number of 138 cases in 2014. The highest peak of rabies cases in foxes was recorded in the years 2010, 2012, 2014 and 2015, constituting respectively 28, 26, 32 and 29 cases.

The number of histological surveys performed annually at the Republican Center for Veterinary Diagnosis varied from 66 laboratory examinations in 2018, with a detectability rate of 87.9%, to 179 laboratory examinations in 2015, with a detectability rate of 93.3%.

Analyzing the geographical spread of rabies on the territory of the Republic of Moldova (Fig. 3) it can be seen that outbreaks of rabies are widespread in all geographical areas of the republic. However, an increased concentration of cases can be seen in the northern and central part of the republic where the surface of forest strips is higher; consequently, allowing the vector of infection to have a longer period of survival.

During the mentioned period, between 250 and 350 thousand dogs were vaccinated annually in order to prevent rabies. At the same time, at the anti-rabies offices in the republic, on average less than 2,000 people that had contact with suspected or suffering from rabies animals, or were bitten by stray dogs, cats, wild animals or rodents were vaccinated.

At the national level, exists a program that aims to prevent and combat rabies in domestic and wild animals. Moreover, any case of suspected rabies is examined in the laboratory.

The main aspects for rabies prophylaxis are focused on applying general prophylaxis measures and providing prophylactic vaccination of receptive animals; actions that aim to:

- Cartography dogs and cats from rural localities and receptive animals from the forest environment.

- Identify and confirm cases of rabies through laboratory testing and detecting the disease origins.
- Provide permanent control of the health status of domestic and wild receptive animals.
- Reduce the number of animals with high potential of infection and prevent the spread of the disease in rabbinic areas through the application of specific measures.
- Perform the rabies vaccination of domestic carnivores and foxes in forest areas.
- Ensure that there is compliance with sanitary norms for collecting, packing and transporting samples to laboratory for the diagnosis of rabies, as well as in combating disease outbreaks.

CONCLUSIONS

1. The epidemiological study carried out established a dragging evolution of animal rabies cases in the Republic of Moldova with an incidence of disease cases ranging from 58 to 167 cases per year, being characterized by successive waves of increase in the number of sick animals with a periodicity of 2 to 3 years.
2. The most frequent cases of the disease were registered in foxes, which are also considered the main vector of disease spread; having variations of confirmed cases that ranged from 14 to 32 based on laboratory investigations, which constituted from 15.4% to 23.2% of the total number of confirmed rabies cases annually.
3. The reduction of rabies in animals and the maintenance of the epidemiological situation against rabies can be achieved by the systematic immunization of carnivores, as well as foxes

from all forest strips on the territory of the republic.

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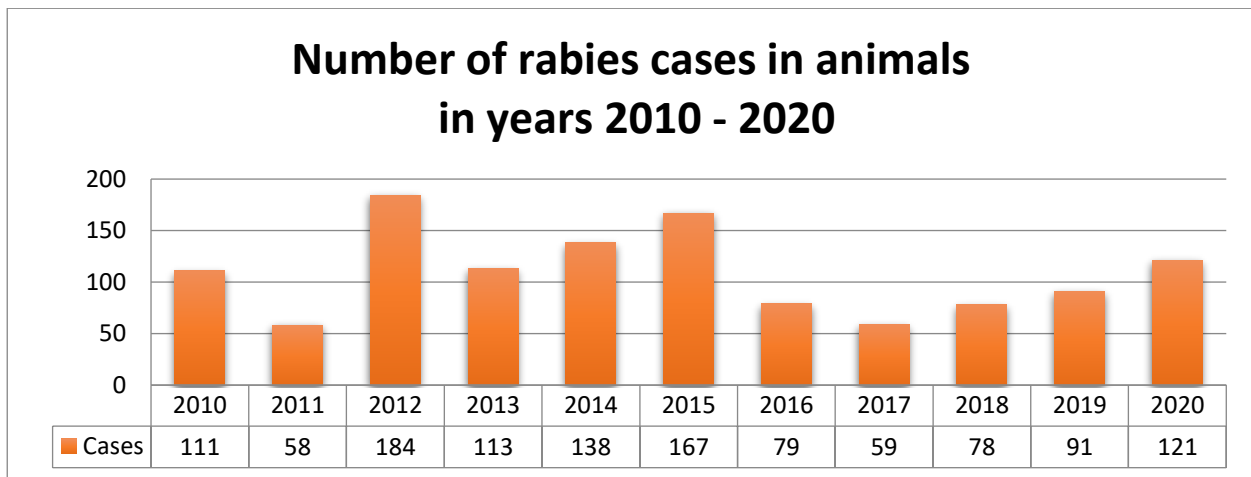


Fig. 1 Number of rabies cases in animals during the years 2010 – 2020

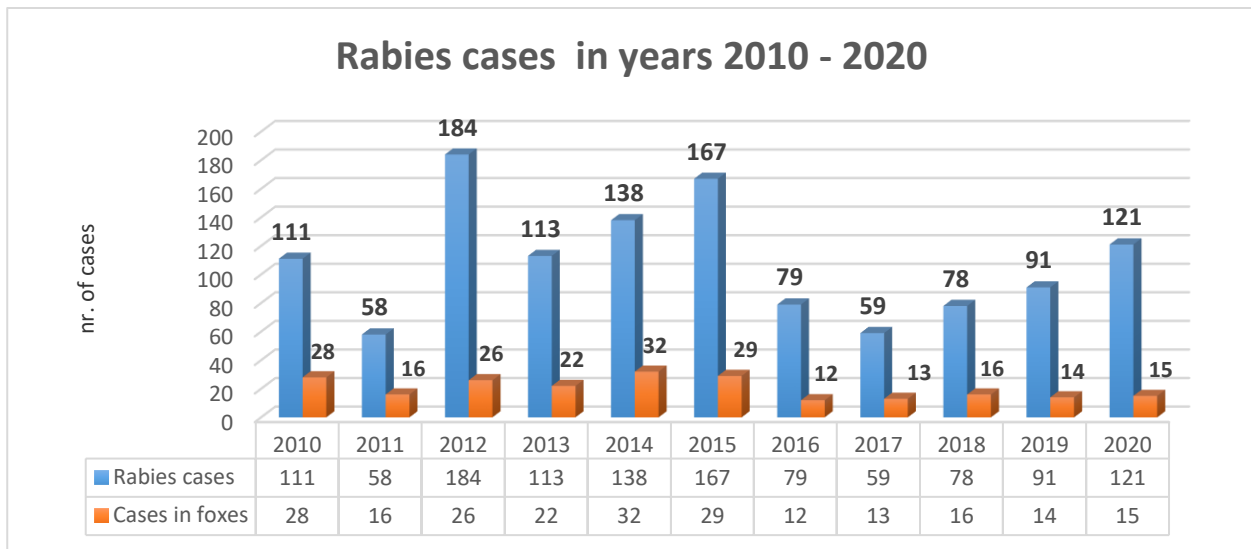


Fig. 2 Cases of rabies during the years 2010 to 2020, including foxes.

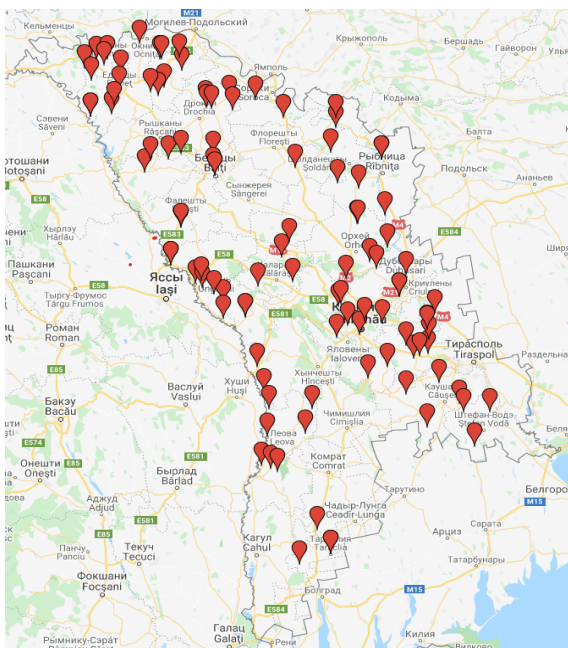


Fig.3 Geographical spread of rabies on the territory of the Republic of Moldova (2020)