AgroLife Scientific Journal - Volume 6, Number 2, 2017
ISSN 2285-5718; ISSN CD-ROM 2285-5726; ISSN ONLINE 2286-0126; ISSN-L 2285-5718

EPIDEMIOLOGICAL PROFILE OF RABIESIN PRAHOVA COUNTY, ROMANIA 2010-2015

Vlad VUTA[1, 2], Gheorghe BARBOI[3], Florica BARBUCEANU[1, 2], Constantin LUPESCU[1, 3], Gabriel PREDOI[2], Viorel SURLARU[4], Constantin VLAGIOIU[2]

[1]Institute for Diagnosis and Animal Health, Bucharest, Romania
[2]University of Agronomic Sciences and Veterinary Medicine - Faculty of Veterinary Medicine, Bucharest, Romania
[3]Spiru Haret University, Faculty of Veterinary Medicine, Bucharest, Romania
[4]Prahova County Sanitary Veterinary Laboratory, Romania

Corresponding author email: vlad.vuta@yahoo.com

Abstract

Rabies is a fatal zoonotic viral disease produced by a Lyssavirus and is causing more than 70,000 human deaths each year. Due to the fatality of the disease and in the absence of the specific treatment, vaccination and immunization are the most important methods to fight against rabies. The aim of this study was to evaluate the epidemiological situation of rabies in Prahova County during 2010-2015. During this period in Prahova county from total number of population 0.25%, (n=6513) out of women, respectively 0.28% (n=6739) out of man were immunized against Rabies. 0.32% (n=8324) out of urban population and 0.20% (n=4928) of rural population were immunized against Rabies. In 2010-2015, 63 animals, 51 wild (81%) and 12 domestic (19%) were find positive to Fluorescent Antibody Test (FAT) for Rabies (5 dogs, 6 cats, 1 bear, 1 cattle and 50 fox). Taking into account the number of positive cases in animals as well as the risk of diseases in human population it is strongly recommended to use procedures in place of vaccination for persons who have come into contact with the animal potentially infected with rabies virus.

Key words*: rabies, epidemiology, Prahova, 2010-2015.*

INTRODUCTION

Rabies is a Central Nervous System zoonotic disease, with the causative agent Rabies virus, distributed worldwide and generally is found in terrestrial mammals and causes between 37.000 and 87.000 human deaths annually (Virus taxonomy 9th report, 2012; WHO Expert Consultation on Rabies second report, 2013; Schell, 2010; Vuta et al., 2016). In Europe canine rabies has been eradicated from by control measures such as dog movement restriction and mass vaccination and now the major reservoir of rabies was replaced by red fox (*Vulpes vulpes*) (Cliquet, 2015;Vuta, 2016). A co-financed by the EU and the Romanian state budget oral vaccination trial of foxes has been conducted in 16 counties from the western part of Romania in spring and autumn 2011 (Vuta, 2016). The purpose of our study was to assess the epidemiological profile of Rabies in Prahova County during 2010-2015, due to the following reasons: rabies is a fatal zoonotic disease and the risk is still present.

MATERIALS AND METHODS

Data collection

The analysis of the epidemiological situation of Rabies in Prahova County was based on information from National Reference Laboratory for rabies and Prahova County Sanitary Veterinary Laboratory.

The data of patients were collected from data base of Vaccination Center against Rabies of the County Infectious Diseases Emergency Hospital in Ploiesti, Prahova County.

The next parameters were collected: age, gender, aggressor animal, date of contact and date of starting prophylaxis.

During 2010-2015 in Prahova County, there was no reported any case of human rabies.

Statistical analysis and spatial distribution

Statistical analyses were performed using Graph Pad Prism version 6.01 software.

For spatial distribution, we have used QGIS 2.18 software.

RESULTS AND DISCUSSIONS

Rabies cases in animals

During the analyzed period (2010-2015), the natural reservoir of rabies virus in Prahova County was identified in wild animals 81% (n=51) in comparison with domestic animals, 19% (n=12). The spatial distribution of diagnosed species and number of animals per year are shown in Figures 1 and 2. The number of positive cases is decreasing, in 2015 only 2 positive foxes were find, due to the oral rabies vaccination program of foxes implemented in Romania since 2011.

The pets and the farm animals have been involved in most of the cases of aggression, 99% (n=13124), in comparison with wild animals, 1% (n=126). The distribution per year and per species is shown in Figure 3, as well as, Figure 4 for dog and cat distribution along 2010-2015.

Registration of people exposed to suspected animals

The total population of Prahova County, according to General population and housing census was 4944296 persons, 51.5% female (n=2547421) and 48.5% (n=2396875) male.

The total population living in urban and rural areas was 2538548 (51.3%), respectively 2405748 (48.7%) (National Institute of Statistics). None of the patients got rabies pre-exposure prophylaxis. The prescribed schedule of immune prophylaxis was performed according to WHO recommendations and protocols (WHO Expert Consultation on Rabies second report, 2013).

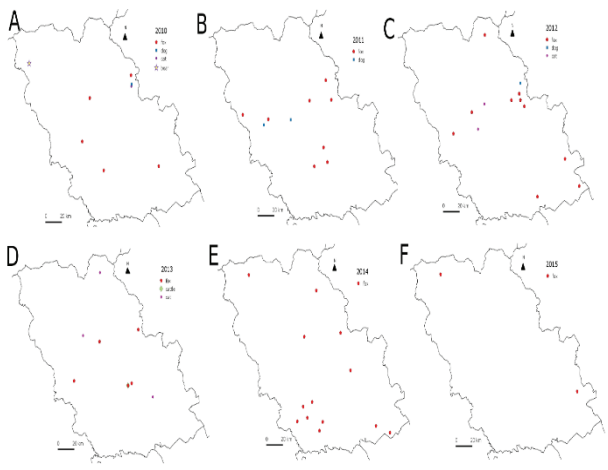

Figure 1. Spatial distribution of rabies cases in animals during 2010-2015, PrahovaCounty. A-2010; B-2011; C-2012; D-2013; E-2014; F-2015

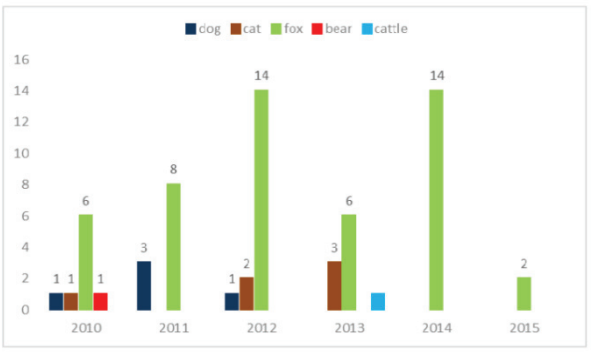

Figure 2. Numbers and species of rabies positive animals per year

Out of 2547421 women, 6513 were immunized (0.25%), as well as out of 2396875 total number of men, 6738 (0.28%) got immune prophylaxis (Figure 5).

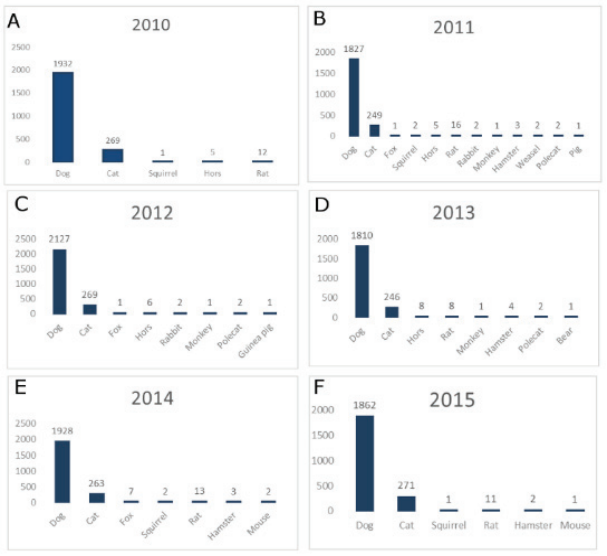

Figure 3. The numbers and species of animals involved in human aggression during 2010-2015. A-2010; B-2011; C-2012; D-2013; E-2014; F-2015

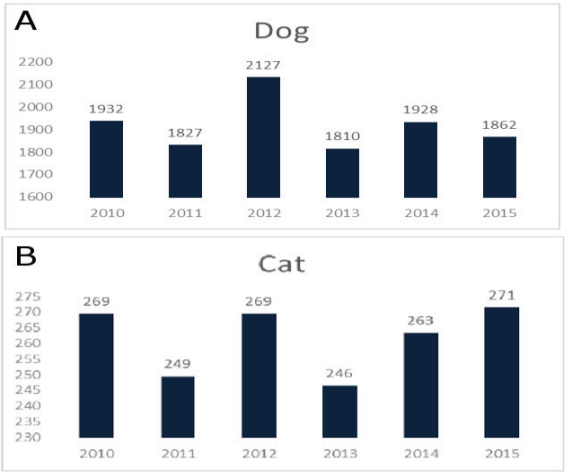

Figure 4. The number of dogs (A) and cats (B) involved in human aggression 2010-2015

There is no relevant difference between number of immunized people divided by gender (Figure 6-A). Regarding urban and rural area, out of 2538548 people living in cities, 8324 were immunized (0.32%) and 4928 (0.2%) persons from 2405748 total number of people from villages were immunized too (Figure 7). The temporal distribution of immunized people from urban and rural areas is shown on figure 6-B and indicate a big difference between these two categories.

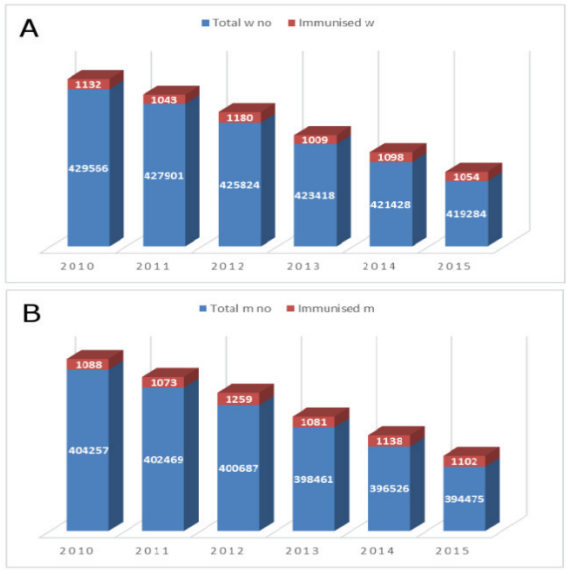

Figure 5. A-number of immunized women reported to total number of women. B-number of men reported to the total number of men

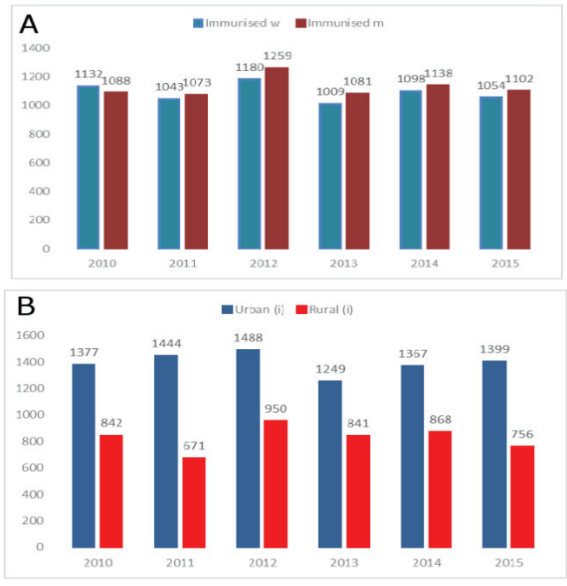

Figure 6. A-immunized women versus immunized men. B-immunized people from urban areas versus immunized people from rural areas

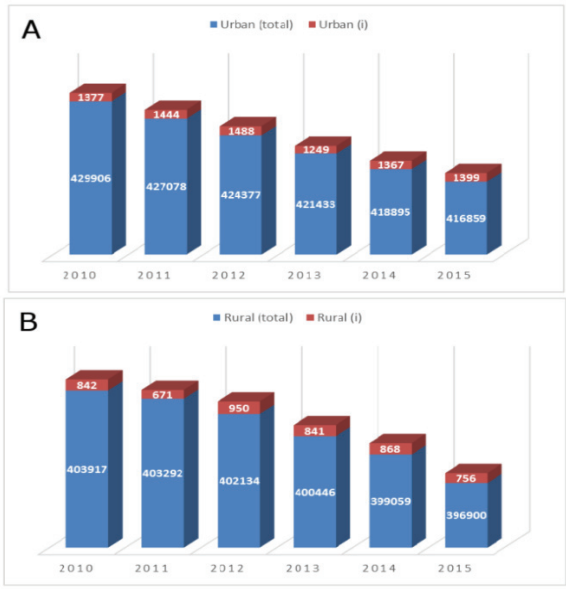

Figure 7. A-number of immunized people from urban areas reported to the total number of people from these regions. B-number of immunized people from rural areas reported to the total number of population from these regions

CONCLUSIONS

The main reservoir of rabies virus in Prahova County, as it is in Romania and even Europe, is fox.

The number of positive cases dramatically decreases in 2015.

The highest number of assaults on human population is made by dogs.

The rabies post-exposure treatment for person exposed to potentially rabid animals is strongly recommended, according to the presence of rabies virus in the studied area.

The program of oral vaccination of foxes has to continue, based on the decreasing number of positive rabies cases in 2015.

There is an obvious need to educate the people from rural areas about the fatal risk of rabies by different ways such as: rural physicians, schools, local administration.

ACKNOWLEDGEMENTS

We thank to Dr. Claudia Vuta who kindly provide us the registers of Vaccination Center against Rabies of the County Infectious Diseases Emergency Hospital in Ploiesti, Prahova County.

REFERENCES

Cliquet F., Picard-Meyer E., Mojzis M., Dirbakova Z., Muizniece Z., Jaceviciene I., Mutinelli F., Matulova M., Frolichova J., Rychlik I., Celer V., 2015. In-Depth Characterization of Live Vaccines Used in Europe for Oral Rabies Vaccination of Wild life. PLOS One, 10(10), p. 1-8.

Schnell M.J., McGettigan J.P., Wirblich C., Papaneri A., 2010. The cell biology of rabies virus: Using stealth to reach the brain. Nat Rev Microbiol; 8: p. 51-61.

Vuta V., Picard-Meyer E., Robardet E., Barboi G., Motiu R., Barbuceanu F., Vlagioiu C., Cliquet F., 2016. Vaccine-induced rabies case in a cow (*Bos taurus*): molecular characterisation of vaccine strain in brain tissue. Vaccine, 34(2016), p. 5021-5025.
http://dx.doi.org/10.1016/j.vaccine.2016.08.013

Vuta V., Barboi Gh., Boncea D., Barbuceanu F., Vlagioiu C., 2016. Evaluation of the Oral Rabies Vaccination Program Of Red Foxes (*Vulpes vulpes*) population In Romania In 2014. Scientific Papers. Series D. Animal Science. Vol. LIX, 2016, ISSN 2285-5750.

***WHO, 2013. Expert Consultation on Rabies, second report.

***Virus Taxonomy 9th report, 2012.

***National Institute of Statistics, Romania, 2016. General Population and Housing Census. Available: http://www.recensamant.ro/.