THE RABIES IN BIHOR COUNTY BETWEEN 2002-2009

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Abstract

Rabies is a zoonotic disease caused by rabies virus of warm-blooded vertebrates, which incidentally affect humans, manifested as acute encephalitis. Every year there are 55 000 deaths (WHO report) in the world. In Bihor county there have been cases of human rabies in 1982, a woman who died in 1993 in Oradea, a woman from Lazareni village who died in Cluj-Napoca. Between 2002-2009 to the County Office of Rabies were 8306 patients presented with wounds bitten by animals.Objectives: 1. Estimating the number of rabies cases presented to the Cabinet County; 2. Analysis of the number of cases potentially rabigen; 3. Defining the categories of animals which produced bites and those caused outbreaks of rabies.

Key words: rabies, wounds bitten, fox.

INTRODUCTION:

Rabies is a viral disease that produces an almost uniformly fatal encephalitis in humans and most other mammals (Bleck TP, CE Rupprecht, 2005). The rabies virus is part of the *Rabdoviridae* family, the *Lyssavirus* genus. From an epidemiological point of view, the reservoir of the virus is composed of wild foxes, wolves, coyotes, badgers, skunks, bats and hematophagous domestic tank: dogs, cats, cattle, etc. (National Association of State Public Health Veterinarians, 2008). In Romania, the fox, the cat and the dog are the main species involved in rabies transmission. Transmission of rabies virus is carried through the bite of infected animals, the contamination with saliva of the recent mucocutaneous lesions, by airborne aerosol-through (caves), by organ transplant (cornea). Responsiveness to the disease is general (Cupsa A., 2007).

Rabies in the world: Every year there are 55 000 deaths (WHO report, 2010) in the world (one person died and 330 more are infected every 1o minutes, most of whom are children, in Asia and Africa). It is widespread throughout the world, with few exceptions: Norway, Finland, New Zealand, Antarctica and some island countries (Jackson AC, EC Johannsen, 2008). The last outbreak of rabies occurred in Peru: more than 500 persons bitten by hematophagous bats and five children died and the number of victims could raise (Alliance for Rabies Control, 2010). Rabies in Europe: report from the European Centre for Disease Prevention and Control of Communicable Diseases (ECDC): in 2008 EU countries 1127

foxes were found infected with rabies virus; Romania reports 975 cases of rabies in wild animals, of which 951 foxes, Latvia 92 cases, including 44 foxes, Slovenia 53 wild animals, including 51 foxes, Bulgaria 52 including 34 foxes, Lithuania 47, Hungary 6. In Romania: 46 cases of rabies in domestic dogs. In the rest of European countries, the domestic animal rabies is almost eradicated. Romania recorded cases of rabies in humans: in 2008, a woman in the Arges County was bitten by the fox, and in 2009 a woman in the Valcea County was bitten by fox and was presented later to the doctor.

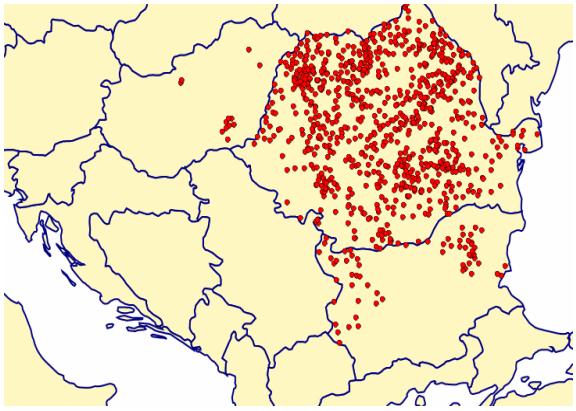

Fig.1-WHO -2009-2010, outbreaks of animal rabies in Romania, Hungary, Bulgaria

Pathogenic: rabies virus enters the body through an animal bite, it is multiply locally and disseminates via peripheral nerves at a speed of 50-100 mm / day to the CNS (intense multiplication). Then disseminates via centrifugal nerves in various peripheral tissues and organs: salivary glands, where it is reply again (Rebedea, 2000).

Clinical Manifestations: Hatching: 20-90 days after exposure (5 days-more than a year)

- *Angry-hyperactive form*
  - Prodrome, nonspecific symptoms: asthenia, nervousness, insomnia,
    numbness and pain at the bite.
  - Time status: agitation, aggression, screaming, exacerbation of the senses: hearing, smell, sight; abundant salivation; hydrophobic; aerophobia.
    Then fever, hyperreflexia, seizures.
  - Death: 1-2 weeks after installation of the crisis of rage.
- Paralytic form - 20% of cases

  Start with lombar pains, than paresis, flaccid paralysis, sometimes ascendant type; mental state is deteriorating to coma (hours → weeks) (Cupsa, 2007).

Diagnosis:
-Epidemiological: meaningful context;
-Clinical: the crisis of anger, aerophobia, hydrophobic; paresis, paralysis, coma.
-Laboratory: rabies virus RNA-PCR; Ac-specific serum and CSF; Viral-Ag by IF from saliva, skin, corneas footprint;
-Postmortem histopathology exam – Babes-Negri corpuscles (Fig.2):

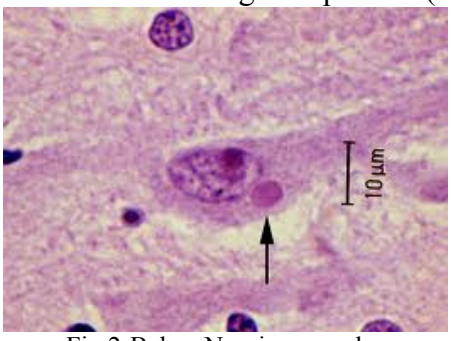

Fig.2-Babes-Negri corpuscles

Treatment: No specific treatment, etiological, which impede progress towards death. *Postexposure prophylaxis:* essential for preventing rabies
1. Surveillance of the biting animal until 14 days (if possible);
2. Local treatment of the geraniums wound (if it is applied immediately, reduces the risk of infection with 20%): wash thoroughly with soap and water, disinfection with alcohol 50-70 degrees bromocet, quaternary ammonium solutions;
3. Rabies prophylaxis with serum or IgG specific anti-rabies vaccine considering the seriousness of the wound, the animal health status, type of contact (Chiotan M., 2002).

In Romania is using the vaccine derived from Vero cell line, inactivated and purified, which induces a high seroconversion with persistence and strength of which are administered each Ac o, 5 ml 0-3-7-14-28 day and rabies serum are administered at a dose of 40 IU / kg. body (rabigen risk if large quantity ½ infiltrated around the wound) (Brumboiu M. I., I. Bocsan, 2005).
Preexposure prophylaxis: is done to professional groups at risk (veterinarians, laboratory staff, dog catcher, etc..) – vaccine - day 0-7-28 and booster at 1 year and thereafter every five years (Brumboiu M. I., I. Bocsan, 2005, CDC 2004, 2008).

MATERIAL AND METHODS:

The were analyzed the cases presented with wounds bitten by animals in the range 2002-2009 to the County Office of Rabies, saying rabigen risk, age distribution, environment of origin, seasonality.

RESULTS AND DISCUSSION:

In Bihor county there have been cases of human rabies in 1982, a woman who died in 1993 in Oradea, a woman from Lazareni village, who died in Cluj-Napoca. Between 2002-2009 to the County Office of Rabies were 8306 patients presented with wounds bitten by animals.

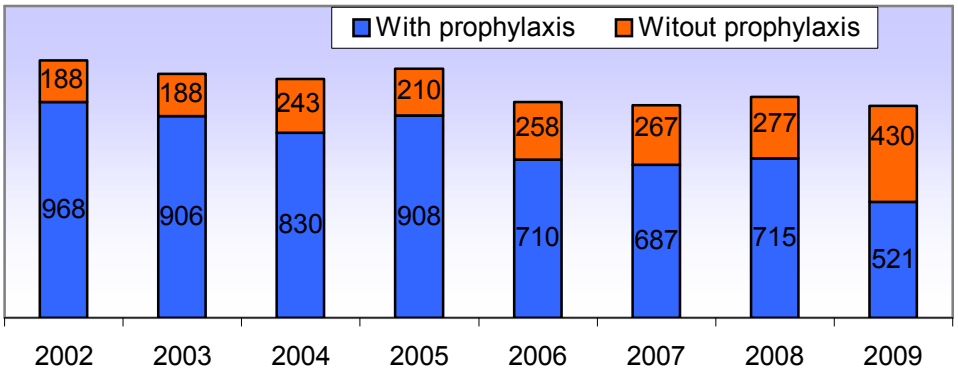

Fig. 3 - Patients with wounds bitten by animals:

In 2002, 15.4% of patients had potentially rabigen wounds and rabies prophylaxis was performed in 2009, their number increased to 45.2%, correlating with an increased risk of infection by multiplication of the animal rabigene outbreaks.

Table 1

Distribution by calendar month:

	2002	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**
I	60	72	57	59	58	57	69	56
II	66	69	67	51	73	60	51	61
III	105	109	74	107	59	77	76	61
IV	108	91	89	115	86	85	89	120
V	**123**	**120**	**98**	**123**	**119**	**109**	**104**	**96**
VI	**128**	**108**	**122**	**125**	**97**	**103**	**87**	**87**
VII	**146**	**118**	**129**	**113**	**124**	**95**	**112**	**108**
VIII	**104**	**113**	**100**	**114**	**84**	**97**	**127**	**107**
IX	98	84	84	109	81	75	82	75
X	87	73	108	81	72	71	78	63
XI	78	83	72	65	66	78	57	63
XII	53	54	73	56	49	47	60	54
TOTAL	**1156**	**1094**	**1073**	**1118**	**968**	**954**	**992**	**951**

42.7% of cases were presented in May-August (Table 1).

Table 2

Distribution by age groups:

	2002	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**
0-16 ani	330	357	332	313	269	285	275	241
>16 ani	638	737	741	805	699	669	717	710
TOTAL	**1156**	**1094**	**1073**	**1118**	**968**	**954**	**992**	**951**

68.82% of the adults were present(Table 2, Fig. 4). The number of children were small (third of all those presented, but with more severe lesions, most often located at the cephalic extremity) (Rebedea I., 2000, Toltzis P, 2007).

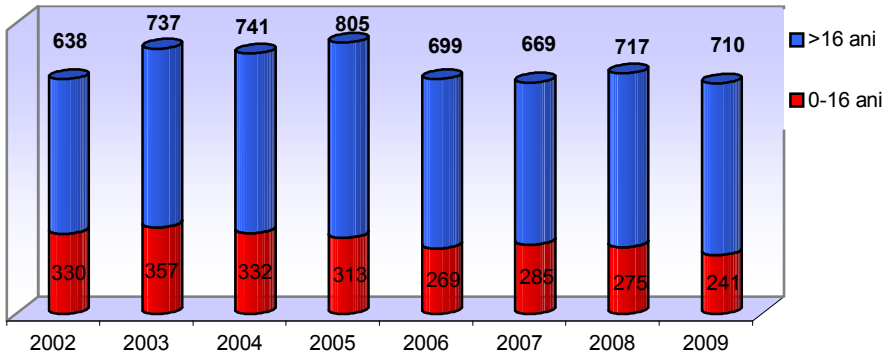

Fig.4-Distribution by age groups

Table 3

Distribution of average as of origin:

	2002	2003	2004	2005	2006	2007	2008	2009
Urban	842	814	639	765	690	695	631	632
Rural	314	290	434	353	278	259	361	319
TOTAL	1156	1094	1073	1118	968	954	992	951

Urban plagues were presented with geraniums wounds 68.72% (probably due to greater addressability) (Table 3, Fig. 5).

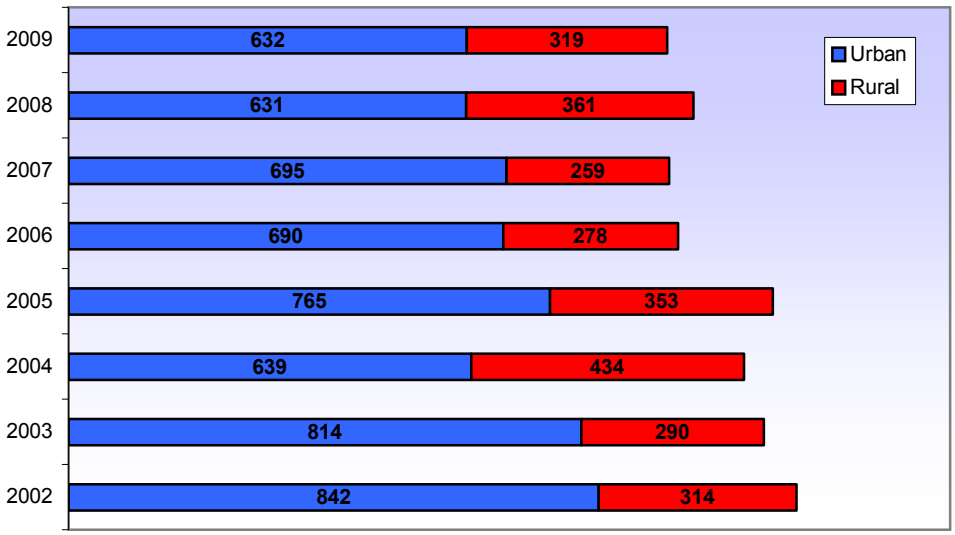

Fig.5- Distribution of average as of origin

Table 4

Categories of animal bites occurred:

		2002	2003	2004	2005	2006	2007	2008	2009	Total	%
1.	**Dog**	1026	923	945	968	836	817	858	774	7147	86,04
2.	**Cat**	80	95	91	102	67	89	95	103	722	8,69
3.	**Fox**	7	4	1	10	12	2	1	8	45	0,54
4.	**Wolf**			2					8	10	0,12
5.	**Rat**	30	51	18	22	32	38	30	27	248	2,98
6.	**Squirrel**					3			1	4	
7.	**Bat**		3		1	1				5	
8.	**Monkish**	3	4	3	4	5				19	
9.	**Horse**	1	4	4	3	5	3		1	21	
10	**Cow**								21	21	
11	**Pig**	6	1		2	5	3	1	1	19	
12	**Bunny**		1				1	4	2	8	
13	**Badger**				1					1	
14	**Jder**		1							1	
15.	**Boar**		1							1	
16.	**Ferret**			1				1		2	
17.	**Mole**						1			1	
18.	**Deer**					2		1		3	
19.	**Hamster**	3	6	8	5				4	26	
20.	**Bear**								1	1	
21.	**Hedgehog**							1		1	
	Total	1156	1094	1073	1118	968	954	992	951	8306	

Table 5

Animals found with rabies in the Bihor county during the period 2001-2010.

1.	**Fox**	**16**	**43,24**
2.	Wolf	3	8,10
3.	Cat	9	24,32
4.	Dog	6	16,21
5.	Cow	1	2,7
6.	Bursuc	1	2,7
7.	Wild cat	1	2,7
	TOTAL	**37**	**100%**

Over 50% of animals with rabies have been wild. The increasing outbreaks of rabies in Bihor County in 2009 (10 outbreaks) coincides with the lack of foxes vaccination in 2009, last vaccination was made in November 2008, according Bihor Forestry Directorate (Table 4, 5, 6, 7).

Table 6

Number of positive samples collected during the period 2001-2010

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Sampling	244	221	160	121	93	50	27	31	49	43
Positive	3	1	4	3	4	3	3	4	10	4

Table 7

Animals with positive samples collected during the period 2001-2010

Year	Species	Locality	Year	Species	Locality
2001	Caine	Suplacu de Barcau	**2007**	Vulpe	Lazareni
		Valea lui Mihai			Marghita
	Vulpe	Ciumeghiu		Caine	Petreu
2002	Caine	Bucuroaia	**2008**	Vulpe	Tinca
2003	Pisica	Dumbravani	**2009**	Vulpe	Sambata

		Sacuieni			Hidisel
		Ciuhoi			Lazareni
	Vulpe	Santandrei			Cherechiu
2004	Pisica	Sacuieni			Cherechiu
		Biharia		Bursuc	Alesd
	Caine	Abramut		Vaca	Butan
2005	Vulpe	Sacuieni		Caine	Brusturi
		Sacuieni		Pisica	Cuzap
	Pisica	Sudrigiu		Lup	Bratca
		Oradea	**2010**	Lup	Rosia
2006	Vulpe	O.S.			Briheni
		Avram Iancu		Vulpe	Curatele
	Pisica	Carandeni			Viisoara

CONCLUSIONS

- In the period 2002-2009 were 8306 patients presented to the County Office of Rabies with wounds bitten by animals.
- The number of patients with potentially rabigen bites increased three times in 2009 (45%) compared with 2002 (15%) and is correlated with multiplication of the animal rabigene outbreaks and an increased risk for infection.
- Most patients were adults, one third were children.
- Two thirds of patients were from rural areas - probably due to higher addressability.
- Patients had been bitten by dogs (86%), cats (8.69%), rodents (2.98%). Less than 1% have been bitten by the fox, wolf.
- Animals identified with rabies in the last nine years in Bihor county were: foxes (43,24%), cats (24,32%), wolves (8,10%), dog (16,21%), cow, badger.
- Rabies is a zoonotic disease, prevention of disease in humans is closely related to the control of rabies in animals.
- Romania ranks first in EU in terms of number of animals with rabies and is the only EU country with the indigenous cases of human rabies.
- Rabia, is a real concern today. The disease was under control with the cost of great human and material effort.
- Drastic measures are necessary to eradicate the disease in the silvatica tank, concentrated mainly on foxes.

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