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# Serodiagnosis evaluation of rabies and animal bites in North of Iran, 2010

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## Abstract

Rabies disease is one of the most important public health problems in some countries of the world such as those in the Eastern Mediterranean region. According to the world health organization reports, more than 10 million people who are bitten by animals are annually treated by prophylactic treatment regimen of rabies in the world. The present study was undertaken to evaluate the prevalence and other information's about rabies as well as the variables related to the bitten persons during 2010 in North of Iran. After sending samples to north unit of Pasteur Institute located in Amol City, all samples were analyzed by indirect immunofluorescent technique and in the case of observing negri-bodies, samples were announced as positive. Also, negative samples were injected to mice. During the study period, 22 exposed persons treated for animal bites were included in our study that 14 (63.63%) male and 8 (36.37%) female. Injuries take place in hand, leg, face and abdomen that most injury observed in hand. Because rabies is endemic in wild life of Iran, infection of domestic animals is occurring repeatedly, also increasing population of stray dogs and developing statistics of animal bite cases and dissipation of rabies in most provinces of Iran, notifies a need to pay more attention on controlling this disease.

**Keywords:** Rabies, animal bitten, Pasteur Institute, Iran.

## INTRODUCTION

Rabies is an acute fatal viral encephalitis that usually transmitted from animals to man followed by domestic and wild animal bites (Rad et al., 1999). Rabies disease is one of the most important public health problems in some countries of the world such as those in the Eastern Mediterranean region (WHO, 2010). According to the world health organization reports, more than 10 million people who are bitten by animals are annually treated by prophylactic treatment regimen of rabies in the world. About 50,000 human deaths are annually reported due to rabies (Simani, 2004). In Asia, most of the mortality cases of human rabies were reported from the under-developed countries such as India, Pakistan and Bangladesh which have high populations and have no specific strategies for controlling rabies. The real numbers of human deaths due to rabies in these countries are more than these numbers, because there is no advanced surveillance system of disease control to find out the real numbers of infected and fatal human cases (WHO, 2010).

The present study was undertaken to evaluate the prevalence of rabies as well as the variables related to the bitten persons during 2010 in North of Iran.

## MATERIALS AND METHODS

In this Cross-Sectional study, data related to morbidity of human rabies cases and all of recorded data related to persons who were bitten by animals during 2010 in Ardabil, Talesh, Rodsar, Lahijan, Behshahr, Bandargaz and Aliabad katol cities were analyzed. Suspicious cases of rabies were transferred to Pasteur Institute of North in two ways. In initial years, the head of the animal was transferred to this institute for security issues. During 2010, samples taken from occipital area of the brain was transferred to this unit in kits manufactured by Pasteur Institute Company (Pas-78) which contained preservative solution. The samples all were analyzed by Indirect Immunoflorescent technique and in case of observing negri-bodies the samples were announced as positive. But if the

**Table 1.** Prevalence of rabies and animal bites in north of Iran, 2010 according to morbidity, sex, kind and location of injury.

	Number of samples	Sex		Location of injury					Kind of injury		
		Male	Female	Hand	Leg	Face	Abdomen	Hand and Leg	Surface	Moderate	Deep
Numbers	22	14	8	10	4	1	2	5	14	5	3
Percent (%)	100	63.63	36.37	45.45	18.18	4.54	9.09	22.74	63.63	22.72	13.65

**Table 2.** Determination of animals bites in north of Iran, 2010 according to type of the animal.

	Stray dog	Wolf	Jackal	Cow	Squirrel
Numbers	14	2	1	4	1
Percent (%)	63.63	9.09	4.54	18.18	4.54

sample was negative a small amount of the sample was pounded in porcelain pounder and poured in 20 cc vials and then serum saline containing 500 Penicillin and 1560 µg/ml Streptomycin was added to it and a suspension of 10 to 20% was prepared. After 30 min, 30 µl of this suspension was injected to 12 Balb/c mice intracerebrally using gage 26 syringe and these mice were kept for 28 days. Fatalities up to fifth day were not due to rabies and after that were attributed to rabies. Then, wet mounts from the brain of dead mice were prepared and analyzed by Indirect Immunofluorescent technique. Conducted data was statically analyzed using SPSS software and T and Chi square tests.

## RESULTS

During the study period, 22 exposed persons treated for animal bites were included in study that 14 (63.63%) were male and 8 (36.37%) were female. Injuries took place in hand, leg, face and abdomen and most of injuries were observed in hand (Table 1).

In this study animals suspicious to rabies that had attacked human were also analyzed. In positive cases, dogs with 63.63% and jackal and squirrel with 4.54% respectively had the highest

and lowest attack rates (Table 2).

The highest number of infected cases was in range of 21 to 40 years old individuals (45.45%) and the lowest was in those in range of fewer than 20 years old (22.72%) (Figure 1).

## DISCUSSION

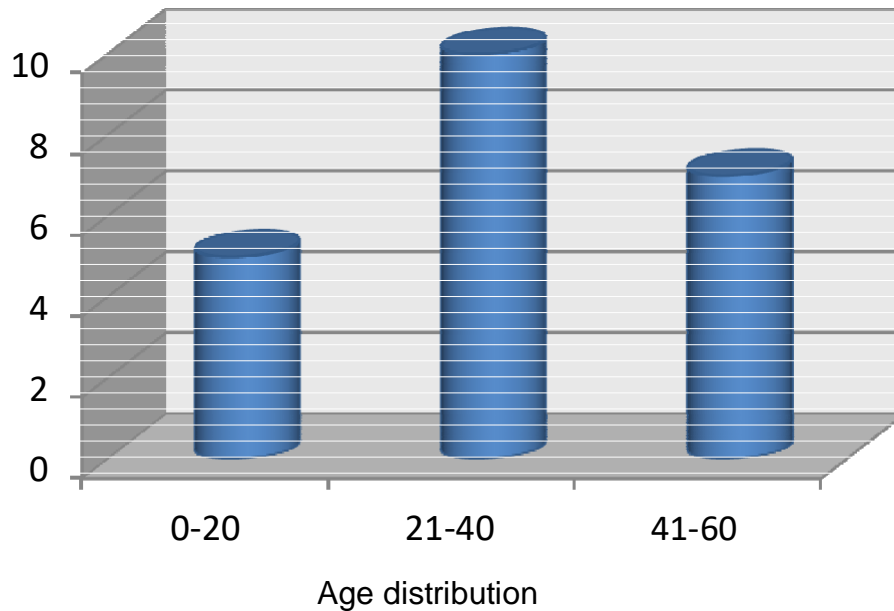
Rabies has a special place in the history of medical research and is one of the diseases that can be important in human health (Janani et al., 2008). Europe and North America have successfully controlled rabies in domestic animals and only wild animals are the source of rabies in these countries and dog bite is still the main way of transmission of disease to human (Alavi and Alavi, 2008; Krebs et al., 2004). As also shown in this study stray dog bite allocates the highest rate of incidence of rabies disease to itself (57.39% of the cases) which in comparison to other animals is significantly higher, that in development country among Iran basal problem is lack of control of stray dogs.

According to Zeynali's report, more than 50,000

individuals each year receive anti rabies treatments in Iran because of getting bitten by animals suspicious to rabies. Also, according to their analysis young individuals are at greater risk and more than 90% of cases are male (Zeynali et al., 1999) which is consistent with data obtained in present study.

In domestic animals the highest numbers of positive cases were seen in cows (21.73%) and according to Pasteur Institute's, reports positive cases of rabies in cows in year 2003 and 2002, respectively were 56.3 and 52.4%. Higher infected cases of cows in comparison to other domestic animals can be due to higher sensitivity to infection and also distinct symptoms of the disease in this animal. Whereas, sensitivity of sheep and goat is less than cow and symptoms of the disease in these animals is not distinct like cow and many cases of rabies in sheep and goats can be misdiagnosed with other diseases and so will not be reported (WHO, 2000; Simani, 2003).

In a study conducted by Rezaeinasab (1904 to 2003) in Kerman province of Iran, 10 individuals were infected with rabies disease which 2 of them were female and 8 were male and half of them



**Figure 1.** Age distribution of persons who were bitten by animals in North of Iran, 2010.

were attacked by dogs (Rezaeinasab et al., 2007).

Alavi demonstrated that of 894 patients 62.0% were male, and average age of males and females were 24.4 years and 26.2 years, respectively. Dogs, scorpions, mice and snakes were the most commonly involved animal species, causing injuries with a frequency of 69, 12.5, 8.8 and 4.4%, respectively. Feet (58.1%) and hands (30.6%) were the most commonly affected body parts, followed by the face and other parts. Infectious complications were seen in 127 patients, among them 94 soft tissue infections (74.1%), 28 cases of sepsis (22.0%) and five of endocarditis (3.9%). Thirty-five cases (3.9%) died following animal bites and stings, among them 28 (80%) due to scorpion stings, 4 (11.4%) related to dogs and 3 (8.6%) from snake bites. No cases of rabies were observed in these patients (Sheikholeslami et al., 2009).

Because rabies is endemic in wild life of Iran, infection of domestic animals is occurring repeatedly, also increasing population of stray dogs and developing number of animal bite cases and dissipation of rabies in most provinces of Iran, notifies a need to pay more attention on controlling this disease.

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