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Review Article

**THE INCIDENCE OF RABIES IN IRAN- A SYSTEMATIC
REVIEW****Hamidreza Sheykhi¹, Zahra Noori², Hadis Mastalizadeh¹, Ehsan Faghiri^{3*}, Mohamad Reza Havasian⁴**¹Department of Nursing and Midwifery, Zabol University of Medical Sciences, Zabol, Iran.²Resident of Veterinary Surgery in Ferdowsi University of Mashhad, Mashhad, Iran.³Doctor of Veterinary Medicine, Zabol University, Zabol, Iran⁴ Department of Periodontics, School of Dentistry, Ilam University of Medical Sciences, Ilam, Iran**Abstract:**

Information obtained on diseases common between humans and animals has led to significant improvements in the diagnosis and treatment of these diseases. However, this group of diseases infects a large number of animals and, on a smaller scale, humans. Rabies is one of the diseases caused by animal bite and in case of the emergence of clinical signs; it will definitely end in the death of the individual. Therefore, the present study has been conducted in order to investigate the incidence of rabies in Iran over the past few years. Present-research-is-a-systematic-review-study. In order to find the studies conducted in Iran, the articles in national and international journals and dissertations available on Magiran, Iranmedex, SID, Google-scholar, and PubMed databases were used. The data collected were analyzed by SPSS version 19 through using descriptive-analytical statistics and chi-squared statistical test (X^2 test). The incidence rate of rabies was 4 cases per year in Ilam province, three of which were caused by dog and one of which was caused by cat bite. 25869 cases of animal bite were reported over five years, the most frequent of which was related to dog bite and was reported in rural areas. One case of a 46 years old patient affected with rabies caused by marten bite was reported in Tabriz.

Keywords: Rabies, Systematic Review, Iran.**Corresponding author:****Ehsan Faghiri,**

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INTRODUCTION:

Rabies is a fatal infectious disease of the central nervous system affecting all mammals, from bat to cow, especially carnivores, such as dogs, wolves, jackals, foxes, cats, ruminants, and human beings. The causative agent of these diseases is a RBC virus belonging to Robde Viruide family [1]. In 1902 in Hungary, Aujeszki stated that rabies is caused by a virus and, later, it was turned out that this disease has been observed in many countries of the world. Despite the possibility of prevention and effective and safe vaccine, rabies continues to be a health problem in many countries worldwide, especially in Asia and Africa. 55,000 deaths from rabies occur annually, most of which occur in Asia and Africa; children under the age of 15 are the most vulnerable group against this disease (15-30% of victim). Rabies is a disease caused by the bite of the infected animal; in case of infection, it has a fatality rate of 100% [2]. Rabies is one of the diseases caused by animal bite and in case of the emergence of clinical sings; it will definitely end in the death of the individual [3]. Iran is among countries in the world in which rabies has been reported in both domestic and wild animal. This disease is still a major economic and health issue in Iran and almost all countries are struggling with infected cases [4]. Although more than 10 million people are treated with rabies vaccine and serum after being bitten by animals each year, 40 to 70 thousand deaths resulting from rabies are reported each year because of not, or overdue, visiting of the doctor [5, 6]. Approximately, 50% of those who have been bitten by dogs infected with rabies suffer this disease and die a painful dearth over a short number of days. Vaccination against rabies before and after the bite of the infected animal is the only solution of preventing rabies. This disease has been reported to occur in more than 150 countries around the world and more than 55000 individuals die each year because of rabies [7]. Due to global distribution, incidence, human costs, high human and animal mortality, rabies has become one of the most prominent viral zoonosis; this diseases imposes extremely huge economic costs on the health systems of countries all over the world. Therefore, the present study has been conducted in order to investigate the incidence of rabies in Iran over the past few years.

MATERIALS AND METHODS:

Present-research-is-a-systematic-review-study. In order to find the studies conducted in Iran, the articles in national and international journals and dissertations available on Magiran, Iranmedex, SID, Google-scholar, and PubMed databases were used, and more than 94 articles were found, among which 12 articles related to the topic that met the criteria for entering the study were investigated.

The prevalence of animal bite and rabies varies in different provinces in Iran; in order to provide more exact and comprehensive analysis, Iran has been divided in five regions of south, north, east, west, and center. The data collected were analyzed by SPSS version 19 through using descriptive-analytical statistics and chi-squared statistical test (X^2 test)[8,9]. Moreover, $P < 0.05$ was considered as the significance level.

FINDING

Based on the results of the present study, the incidence rate of rabies was 4 cases per year in Ilam province, three of which were caused by dog and one of which was caused by cat bite. 25869 cases of animal bite were reported over five years, the most frequent of which was related to dog bite and was reported in rural areas. One case of a 46 years old patient affected with rabies caused by marten bite was reported in Tabriz. According to the findings of Agh-Ghola study, with an incidence rate of 94.4%, dog bite was the most common cause of rabies. Out of 1014 cause of animal bite reported in Rasht, dog bite in rural areas in the spring turned out to be the most common combination. Based on the results of a three-year study conducted in Kalaleh, the majority of victims were students; they were mostly bitten in the foot by dogs in the spring.

DISCUSSION:

Animal bites are a major threat to human health and some of the subsequent infections such as rabies are so intense. Anaerobic microorganisms have been separated from two third of infections in former studies. Rabies is one of the oldest and most dangerous diseases mentioned in medical documents. This disease has been reported in more than 150 countries all over the world, except for the Antarctic. According to the World Health Organization (WHO), 99% of rabies cases reported in 2015 have been caused by dog bite and more than 95% of deaths caused by rabies have occurred in Asia and Africa [10]. Therefore, the present study has been conducted in order to investigate the incidence of rabies in Iran over the past few years. Based on the results of Bahonar et al research (2008), which was conducted in order to investigate the epidemiology of rabies and animal bite in Ilam province, the majority of animal bites occurred among men in rural areas in the spring and winter; the majority of bitten subjects turned out to be 10-29 years old [11]. According to the findings of Naghibi et al research (2014), which was conducted in order to investigate epidemiological characteristics of animal bite in Mazandaran, 203.4 per 100,000 people, the majority of whom were mean, were bitten by animals over a period of five years [12]. According to Rafie et al research

(2010), which was conducted to check the epidemiology of animal bites in the city of Aq Qala, the majority of animal bites, mostly dog bites, had happened in rural regions and mostly in 7 areas of body [13]. The analysis of conducted studies showed that rabies is endemically common among domestic animals in Iran. With an annual rate of 100-300 cases per 100000, Guilan is one of the provinces in which the incidence of rabies has been reported to be average [14, 15]. The majority of studies conducted in Iran have stated that animal bite occurs mostly in 10-29 years age range; this disease has been more common in 18-24 and 5-9 years age range in USA [16, 17]. The results of Havasian et al research (2015), which was conducted to investigate the epidemiology of animal bite in Ilam province, showed that 598 cases of animal bite were reported in Ilam province; 148 cases were reported in Shirovan-Chardavol city and 12 cases were reported in Malekshahi [18].

CONCLUSION:

The results of the present study indicated that the majority of dog bites occurred in rural areas by individuals who owned pets. It is highly recommended that required instruction be provided for pet owners and those individuals who keep domestic animals and to provide after-care equipment in areas with high incidence of animal bite.

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