

SEROPREVALENCE STUDY OF EQUINE INFLUENZA IN HORSES IN ARDEBIL AREA – IRAN

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ABSTRACT

Equine influenza disease is one of common diseases in horse. This investigation done on horses in Ardebil region for deliberate seroprevalence of equine influenza virus. Jugular vein were collected From 194 horses (158 stallion, 36 mare) blood samples and after isolation of their serum, seroprevalence of equine influenza virus in blood samples was investigated. 16 horses (8.2%), 8 horses (4.1%), 170 (87.6%) from serum samples were positive, suspected and negative, respectively. The average of positive percentage (pp) in mares were lower than stallions but difference between averages was not significant ($P=0.276$). Investigated horses were in different age groups and the average of positive percentage between different age groups showed nonsignificant difference ($P=0.259$). This concluded that there was serumic infection in the horses in Ardebil area and must be investigated this.

Keywords: *Seroprevalence, Influenza Virus, Horse, Ardebil*

INTRODUCTION

Equine influenza disease is attended by inflammation in upper respiratory tract. Most of epidemics in young horses is appeared less than 2 years of age, especially 2-6 month of age (Ataseven and Daly, 2010). Horses that were maintained in unsuitable environment conditions cross disease period without any problem, but for horses which work or are used in transportation or exposure to unsuitable climate conditions, cough is sever and may led to disease such as Bronchitis, Pneumonia and Bound feet, but fortunately death rate is 1-3% (Newton and Mumford, 2004; Gerber, 1970; Glass *et al.*, 2002; Goto *et al.*, 1976). The cause of this disease is type A virus, it is in two type A1 and A2. Disease transmission in horse is by air breathing that contaminated droplets of horse's breathing are propagated in air lading to disease transmission. For this reason, this virus able to contaminate horses in a short time. Also transmission is possible by contaminated subjects. Generally horse races, horse fairs and places that horses, surgeries is performed, all of them are suitable places for transmission of this disease (Guo *et al.*, 1995; Gupta *et al.*, 1993; Ilobi *et al.*, 1998; Livesay *et al.*, 1993).

For distinction of this disease uses experimented and clinical methods. This study was carried out for investigation of seroprevalence equine influenza in horses in the Ardebil area in Iran.

MATERIALS AND METHODS

Blood samples were taken from 194 horses (158 males and 36 females) from Ardebil area of Iran, during October to November of 2013. On the bases of age these cases were divided in 4 groups under 2 years (52 samples), 2-4 years (40 samples), 4-6 years (63 samples), and over 6 years (39 samples). None of these animals had been vaccinated against influenza and there were no history influenza-related symptoms or signs of the disease at the time of sampling. Ten milliliters of blood were collected from the jugular vein of each animal. The blood samples were allowed to clot and were centrifuged for 10 min at 3000g. After centrifugation, the serum was removed and stored at -20°C until ready for test. Serum samples were transmitted to Laboratory and then seroprevalence was investigated by ELISA method (IDVET kit).

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RESULTS AND DISCUSSION

Results

On the base of positive percent (pp) quantities kit, quantities less than 45 was positive, between 45 and 50 was doubtful and more than 50 was negative which in 16 horses (8.2%) was positive, in 8 horses (4.1%) was doubtful and in 170 horses (87.6%) was negative. Mean positive percent (pp) of equine influenza virus in positive samples 40.13 ± 0.68 , in doubtful samples 48.25 ± 0.56 and in negative samples 64.04 ± 0.67 was recorded.

Table 1: The mean of PP in positive, negative and doubtful horses

Result	Number	PP Mean	Standard Deviation (SD)	Percent
Positive	16	40.13 ± 0.68	2.71	8.2
Doubtful	8	48.25 ± 0.56	1.91	4.1
Negative	170	64.04 ± 0.67	8.72	87.6

In table 2 mean positive percent among males and females was compared .It is determined that there is no significance difference between males and females in term of seroprevalence of this virus, although mean positive percent in males was less than females.

Table 2: Comparison of the mean of PP in males and female horses

Sex	Number	PP Mean	SD	P Value
Male	158	61.59 ± 0.85	10.66	0.276
Female	36	60.61 ± 1.98	11.87	

Maximum mean positive percent was in 4-6 years of age group, and minimum was in 2-4 years of age, which base of ANOVA test, difference between mean among age groups not was significance ($p=0.276$).

Table 3: Comparison of the mean of PP in different age groups

Age group	Number	PP Mean	SD	P Value
Under 2 years	52	62.08 ± 1.42	10.21	0.259
2-4 years	40	58.40 ± 2.26	14.28	
4-6 years	63	62.59 ± 1.25	9.95	
Over 6 years	39	61.72 ± 1.40	8.75	

Discussion

Horse train is developing in Iran and also in Ardebil area and less investigation has been performed about seroprevalence of equine influenza virus. Despite widely use of deactivated equine influenza vaccine since 1960, transmission of A2 type equine influenza virus has been increased (Burrows *et al.*, 1982). Equine influenza type 2 was epidemic in horse populations of North America, Europe and Scandinavian countries (Newton and Mumford, 2004) and this epidemic was reported from South Africa in 1986 (Guther *et al.*, 1999), in India in 1987, China in 1989 (Newton and Mumford, 2004) and Hong Kong in 1992 (Powell *et al.*, 1995). In this study , it is cleared that 16 horses (8.2%) was contaminated to equine influenza virus that significance difference among males and females was not observed , but among age groups difference was important ($p=0.259$).

In a study in turkey that was carried out on 623 serum samples, seroprevalence of equine influenza virus for horses 41.8%, for mules 12.8% and for donkeys 9.4% was reported (Ataseven and Daly, 2010). Because Azerbaijan region (Ardebil) neighbor Turkey, seroprevalence is considerable in this area, although in Ardebil this was less than Turkey.

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Equine Influenza transmission in South Africa at 2003 by simultaneous clinical signals investigation in Cape Town and Port Elizabeth was determined. Primary infection of horse's transmission was between 6-10 days before clinical observation.

In South Africa study it was cleared that isolated virus from equine influenza transmission in world reference laboratories was accorded with known equine influenza virus in USA (Guther *et al.*, 1999).

In a study in tabriz that was carried out on 192 serum samples, seroprevalence of equine influenza virus , 14 horses (7.3%) from samples were positive, 4 horses (2.1%) suspected and 174 horses (90.6%) negative. Average percentage of positive (pp) in females than males, but no significant difference between the mean ($p=0.625$). Horses under review, the different age groups, and the average percentage of positive between different age groups showed no significant difference ($p=0.004$) (Hassanpour *et al.*, 2012).

HIA virus succession was similar to isolated virus succession in Wisconsin, USA 2003. HIA virus succession, agent of equine influenza transmission in 1986, at South Africa was considerably different from viruses that they have been late transmission s agent (Daly *et al.*, 2004). There is no virological document about equine influenza in South Africa between September 1987 and December 2003. In absence of infection document, it is not possible that south African, s virus at 2003 rise out of south Africa transmission virus at 1986. Genetic likeness between South Africa virus 2003 and Wisconsin 2003 revealed that South Africa transmission virus in 2003 probably raised out of America at 2003. Control measurements during equine influenza transmission play an important role in limitation of this occurrence. Compulsory vaccination project for all horses in attention to NHRA with vaccines according to equine influenza vaccines composition played an important role in decreasing equine influenza at South Africa races, and this virus should be introduced to world (Cullinane *et al.*, 2001).

It is concluded that there is seroprevalence of equine influenza virus in Ardebil area and in attention to this virus existence in turkey, it seem quarantine acts and horses trading control is necessary and use of vaccination is advised to ranchers.

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