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Seroprevalence study of Equine Influenza in horses in Tabriz

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ABSTRACT

Equine influenza disease is attended by inflammation in upper respiratory tract and a common disease in horse. This study was conducted on horses in Tabriz area in Iran for seroprevalence of this disease. Blood samples were taken from 192 horses (166 males and 26 females). On the bases of age these cases were divided in 5 groups (6 months - 2 years (4 samples), 2-4 years (22 samples), 4-6 years (42 samples), 6-8 years (50 samples) and over 8 years (74 samples). Serum samples were transmitted to Laboratory and then seroprevalence was investigated by ELISA method (IDVET kit). In 14 horses (7.3%) was positive, in 4 horses (2.1%) was doubtful and in 174 horses (90.6%) was negative. Mean positive percent (pp) of equine influenza virus in positive samples, 22.29 ± 2.57 , in doubtful samples 45.50 ± 0.29 and in negative samples 87.07 ± 0.97 was recorded. 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. Maximum mean positive percent was in 6 months - 2 years of age group, and minimum was in above 8 years of age, difference between mean among age groups was significance ($p < 0.05$). It is concluded that there is serologic infection of equine influenza virus in Tabriz area, it seem quarantine acts and horses trading control is necessary and use of vaccination is advised to ranchers.

Key words: seroprevalence, influenza virus, horse, Tabriz, Iran

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 (Burrows 1982). 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% (Gerber 1970, Glass 2002 and Goto 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, breathing is propagated in air leading 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 1995, Gupta 1993, Ilobi 1998 and Livesay 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 Tabriz area in Iran.

MATERIALS AND METHODS

Blood samples were taken from 192 horses (166 males and 26 females) from Tabriz area of Iran, during April to October of 2010. On the bases of age these cases were divided in 5 groups (6 months - 2 years (4 samples), 2-4 years (22 samples), 4-6 years (42 samples), 6-8 years (50 samples) and over 8 years (74 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 millilitres 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).

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 14 horses (7.3%) was positive, in 4 horses (2.1%) was doubtful and in 174 horses (90.6%) was negative. Mean positive percent (pp) of equine influenza virus in positive samples 22.29 ± 2.57 , in doubtful samples 45.50 ± 0.29 and in negative samples 87.07 ± 0.97 was recorded.

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

Result	Number	PP Mean	Standard Deviation (SD)	Percent
Positive	14	22.29 ± 2.57	29.62	7.3
Doubtful	4	45.50 ± 0.29	12.34	2.1
Negative	174	87.07 ± 0.97	0.58	90.6

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.

Table2: Comparison of the mean of PP in males and female horses

Sex	Number	PP Mean	SD	P Value
Male	166	80.92 ± 1.66	21.44	0.625
Female	26	85.08 ± 4.11	20.97	

Maximum mean positive percent was in 6 months - 2 years of age group, and minimum was in above 8 years of age, which base of ANOVA test, difference between mean among age groups was significance ($p < 0.05$).

Table3: Comparison of the mean of PP in different age groups

Age group	Number	PP Mean	SD	P Value
6 months - 2 years	4	98.50 ± 2.02	4.04	0.004
2-4 years	22	87.91 ± 2.01	9.46	
4-6 years	42	88.33 ± 2.30	14.92	
6-8 years	50	80.48 ± 2.96	20.95	
Above 8 years	74	75.43 ± 2.98	25.61	

DISCUSSION

Horse train is developing in Iran and also in Tabriz 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 (Newton, Muford 2004). Equine influenza type 2 was epidemic in horse populations of North America, Europe and Scandinavian countries (Newton, Muford 2004) and this epidemic was reported from South Africa in 1986 (Guthrie, Stevens, Bosman 1999), in India in 1987, China in 1989 (Newton, Muford 2004) and Hong Kong in 1992 (Powell, Watkins, Lietai 1995). In this study , it is cleared

that 14 horses (7.3%) was contaminated to equine influenza virus that significance difference among males and females was not observed, but among age groups difference was important ($p < 0.05$).

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 2010). Because Azerbaijan region (Tabriz) neighbor Turkey, serovalence is considerable in this area, although in Tabriz this was less than Turkey.

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 (Guthrie 1999).

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 agent (Daly, Personal communication 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, 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 (Guthrie 1999 and Cullinane 2001).

It is concluded that there is seroprevalence of equine influenza virus in Tabriz 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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