



Seropositivity of Equine Viral Arteritis in horses in Iraqi Equestrian club

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Abstract

This study aimed for the detection of the presence of equine viral Arteritis (EVA) infection in horses in Iraq. A hundred and eighty-six blood sample were collected from horses attended to the state clinic in Equestrian club in Baghdad in the period extended from May to November 2014, the samples were transported to the laboratory of clinical pathology in Department of Internal and Preventive Veterinary Medicine/Baghdad University. Serum samples were submitted to competitive Enzyme-Linked Immunosorbent Assay (cELISA) for detection of Equine arteritis virus specific antibodies, the study revealed that 1.61%(3 samples) of the examined samples were seropositive to applied test, that may consider the first indication to the presence of infection with EAV in Iraq .

Key word: Equine viral Arteritis, Horse, Epidemiology, Iraq

ايجابية مصل الخيول لحمية التهاب الاوعية الدموية الحمي الخيلي في للخيول في نادي الفروسية ببغداد

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الخلاصة

لأجل التحري عن وجود الخمج بمرض التهاب الاوعية الدموية الحمي الخيلي (Equine viral Arteritis) تم جمع 186 عينة مصل بشكل عشوائي من الخيول الواردة الى مستوصف الفروسية في الفترة الممتدة من مايو الى نوفمبر 2014 حيث نقلت بشكل مبرد الى مختبر التشخيصات في فرع الطب الباطني والوقائي البيطري / كلية الطب البيطري واجري لها فحص الاليزا التنافسي للتحري عن وجود الاجسام المناعية ضد حمية التهاب الشرايين الخيلي واظهرت الدراسة ان 1.61% من امصال الخيول المفحوصة كانت موجبة للفحص وتعتبر هذه اول نتيجة تشير الى احتمالية وجود الخمج بالمرض في الخيول العراقية مما يفرض وجود دراسات لاحقة لمعرفة مدى انتشار الخمج في بقية مناطق العراق وكذلك محاولة عزل وتوصيف المسبب

Introduction

Equine viral arteritis (EVA) is acute contagious respiratory disease that affect equids[1], the disease is caused by RNA single-stranded positive-sense enveloped virus belong to the genus Arterivirus[2,3]. The first record of the disease was in 1953 when an abortion outbreak in pregnant mares take place in farm in Ohio USA [4], however the disease is now present in most countries with considerable horses populations, due to the continuous international movement of racing horses as well as the spreading of virus through frozen semen [5,6,7].

Despite the fact that EVA is usually inapparent disease especially when mares infection is occurred via coitus ,the disease may manifested by wide range of signs including nasal discharge, congestion and petechiation of the nasal mucosa ,keratitis, palpebral edema as well as edema in extremities, scrotum, and prepuce and signs of pulmonary disease while in severe affected horses may suffer from abdominal pain, diarrhea and jaundice [8,9], the diseases also characterized by abortion of the pregnant mares without marked clinical signs [10].

The inapparent and persistent EAV infection in stallions exacerbate the spreading of EVA and the risk of abortion which have a significant ramification on horse breeding industry [11]

Nowadays commercially vaccines were available to reduce the impact of EVA, however many studies still conducted

to improve these vaccines to control this disease [12, 13, 14].

Since the considerable numbers of respiratory infections and lack of fertility cases of horses reaching clinics, this serological study was conducted to draw attention to the possible impact of this disease in Iraqi horses

Materials and methods

Ethical approval

The research was conducted after scientific approval of research committee in the Department of internal and preventive veterinary medicine, College of Veterinary Medicine, University of Baghdad

Study area

The study was conducted in Equestrian club a suburb in western Baghdad which may consider the largest gathering of horses in Iraq and contain 755 registered animals while the total number of horses in Iraq are approximately 6000 horses.

Collection and examination of serum samples

From May to November 2014 serum samples were collected randomly from 186 horses attended to Alfrosia Veterinary dispensary in Equestrian club (X: 44.27556.Y:33.3078), The samples were transported directly in cooled sterile conditions to Department of Internal Veterinary Medicine /Baghdad university where they subjected to cELISA test for detection where they contain antibody against Equine arteritis virus, the applied test was performed according to the instructions that

supplied with the diagnostic commercial kit (EQUINE ARTERITIS VIRUS ANTIBODY TEST KIT, cELISA*.

Data analysis

The results were Statistical analyzed using SPSS-21** and proportions were compared by chi-square. $P < 0.05$ was considered statistically significant.

* Manufactured by VMRD ,catalog no.272-2 ,USDA product code 5525.2(USA)

Results and discussion

Although horses may count a significant animal from the economic point of view in many countries especially in Europe and USA, in Iraq the sequence of conflicts have diminished any international activates, transport or trading of these animals so the breeding of them is scarce and limited to particular owners that either rise them as a pits or engaged them in local races and the total number is estimated approximately 6000 horse ,that the reason beyond choosing of the Equestrian Club as the solitary place for sample collection because it contain the large horse population bred together in close contact in Iraq, thus the high opportunity for recording and monitoring any emerging infectious disease in this species

Out of a total 186 randomly collected horse serum sample only 3 samples (1.61%) were sero-positive to Equine arteritis virus when tested using cELISA (Table 1). This is the first serological record that refers to the presence of the disease in Iraq however further study are required delineating the epidemiology of the disease in remained part of Iraq as well as isolation and characterization of the territorial infective virus

Table (1) Serological findings of tested horses to equine viral Arteritis cELISA test in relation to sex and age.

Sex of animal	No. of tested samples	<1year		> 1 year	
		+	-	+	-
Male	55	0	22	1	32
female	131	0	17	2	112
Total (%)	186(100%)	0(0%)	39(20.96%)	3(1.61%)	144(77.41%)

+ =seropositive, - = seronagative

Serum neutralization test (SN) is the most sensitive and highly specific assay for detection of EVA (OIE) [15], however ELISA offers a rapid and robust alternative to serum neutralization test since the additional requirements of laboratory facilities and equipment plus the advanced technical expertise that needed for the former test.

Although Alfrosia veterinary dispensary in Equestrian club is considered the only veterinary clinic that specialized in providing medical services to horses in Iraq, the number of arriving clinical cases were infrequent which obligated to gain serum from any horse attend to the clinic and that's why the sampling was randomly, however the presence of any titer of antibodies for EAV is a definite indication of EVA infection because there is no vaccination regimen for horses against any infectious disease nor the applied of artificial insemination in horses in Iraq ,Furthermore all the positive serum were obtained from local horses, which rule out the possibility of vaccination or infection abroad.

Our results were so closed to what recorded in USA when the National Animal Health Monitoring System's Equine 1998 study which showed that only 2% of EVA unvaccinated horses were seropositive to EAV [16].

The present study revealed lower values, comparable with one conducted in Taiwan on 217 horse serum collected from various region and subjected to the same test, the

** SPSS.IBM Corp. Released 2012. IBM SPSS Statistics for Windows, Version 21.0. Armonk, NY: IBM Corp.

obtained Seropositivity was 3.22%(7 samples) but the infection was confined in the northern and central regions [17].

However, these levels can change dramatically due to the world wide horse's transportation and that what subsequent study proved when seropositivity reach to 18.6% in important horses comparing with 1.9% in California native horses [18].

Although many surveillances postulated seroprevalence variety within Europe countries [19,20], however these record may Change significantly over time and that what happen in German horses when Seropositivity to EVA raised from 1.8 to 20% between the years 1987 to 1994 [21].

Despite the fact that the serum samples were collected randomly and few the number of seropositive one, the chi-square tests result showed no significant differences between age and gender of the seropositive horses (shown in table1) which suggest to rule out such factor in any upcoming researches or in vaccination planning of this disease

The result obtained from this study suggest the presence of EVA infection, however further study for virus detection or isolation are required since there are no previous records refers to the presence of the disease in the Iraq and its neighboring countries (OIE)

Conclusion

This study suggests the presences of EVA infection, but the disease have a minor impact on Iraqi horses health

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