

SEROPREVALANCE OF *TOXOPLASMA GONDII* (NICOLLE AND MANCEAUX, 1908) IN THOROUGHBRED ARABIAN MARES AS DETECTED BY SABIN-FELDMAN DYE TEST IN ŞANLIURFA

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Geliş Tarihi: 30.05.2003

Şanlıurfa Yöresinde Safkan Arap Kısraklarda *Toxoplasma gondii* (Nicolle and Manceaux, 1908) Seroprevalansının Sabin-Feldman Boya Testi ile Saptanması

Özet

Bu çalışma, Şanlıurfa yöresinde yarış atı olarak kullanılan kısraklarda *T. gondii* seroprevalansını tespit etmek amacıyla yapılmıştır. Bu amaçla Kasım 2001 ile Haziran 2002 tarihleri arasında 93 kısraktan 10'ar ml kan alınmış ve serumları ayrılmıştır. Elde edilen serumlar, *T. gondii* seropozitifliği yönünden Sabin-feldman boya testi ile incelenmişlerdir.

Test sonucunda 93 kısrağın 7'si (%7.5) *T.gondii* antikorları yönünden pozitif bulunmuştur. Seropozitif 7 hayvanın 6'sında (%85.7) 1/16, 1'inde (%14.2) 1/64 sulandırma *T.gondii* antikoruna tespit edilmiştir.

Anahtar Sözcükler: Kısrağ, Sabin-Feldman Dye Testi, seroloji, *Toxoplasma gondii*

Summary

This study was carried out to determine seroprevalence of *T. gondii* in thoroughbred Arabian mares in Şanlıurfa. For this purpose, blood samples were collected from a total 93 horses between November 2001 and June 2002 and sera were separated from those samples. The sera were analyzed to detect antibodies against *T. gondii* using Sabin-Feldman dye test.

Results indicated that, 7 (7.5%) of 93 horses were seropositive for *T. gondii* specific antibodies. Titers of 1/16 and 1/64 were found in 6 (85.7%) and in 1 (14.2%) of the 7 seropositive horses, respectively.

Key Words: Dye Test, mare, serology, *Toxoplasma gondii*

Introduction

Toxoplasmosis is caused by *Toxoplasma gondii*, an Apicomplexan protozoan. The infection is widespread in humans and animal species, having already been reported in many countries and different climates. The definitive hosts are domestic cat and other felids. Various warm-blooded animals serve as intermediate hosts. Intermediate hosts of the parasite become infected by ingestion of sporulated oocysts and cyst contaminated meats by contacts with free tachyzoites or congenitally via placenta (7,9).

T. gondii, *Sarcocystis neurona*, and *Neospora caninum* are related protozoan genera that can cause encephalomyelitis in livestock and laboratory animals. Equine protozoal myeloencephalitis is caused by a protozoal infection of the central nervous

system and is the most commonly diagnosed neurological disease of horses (5,6,9).

T. gondii usually infest both definitive and intermediate hosts without producing any clinical signs. Toxoplasmosis can be diagnosed by serological or histological examination. Many serological tests have been used to detect *T.gondii* antibodies. Of many tests available; the Sabin-Feldman dye test (DT), the complement fixation test (CF), the indirect haemagglutination test (IHAT), the Enzyme-Linked Immunosorbent Assay (ELISA), the latex agglutination test (LAT), and the modified agglutination test (MAT) are commonly used. The most routinely used test among these is Sabin-Feldman dye test (7,8,16,17).

Serological studies reported from various countries indicate that toxoplasmosis occurs in horses but clinical disease attributable to the infection is relatively uncommon (8,10,13,14,16). The first study on equine toxoplasmosis in Turkey was reported by Weiland and Dalchow (14), in 1970. Several other serological studies were then conducted about the disease (1,2,4,11,12,17).

The objective of this study was to detect the antibodies against *T. gondii* serologically in thoroughbred Arabian mares in Şanlıurfa.

Materials and Methods

Blood samples obtained from 93 thoroughbred adult (>1 year old) Arabian mares were randomly selected around Şanlıurfa. The samples were centrifuged at 4000 g for 10 min and sera were separated. The serum samples were stored at -20°C until analyzed for *Toxoplasma gondii* antibodies. The sera were tested using Sabin-Feldman dye test (DT) at Refik Saydam Hygiene Institute in Ankara. For the DT, the sera were inactivated for 30 min at 56°C and examined in fourfold dilutions (1:16, 1:64, 1:256 and 1:1024). In this test, alive virulent tachyzoites of *T. gondii* were used as antigen.

Results

T. gondii antibodies were found in 7 (7.5%) out of the 93 mares. The antibodies titers of 1/16 and 1/64 were found in 6 (85.7%) and in 1 (14.2%) of the seropositive mares, respectively (Table 1).

Discussion

Although *T. gondii* antibodies have been reported in horses from many countries, including Turkey there is no clear evidence that *T. gondii* causes clinical symptoms in horses (7). Dye test is the most sensitive serological test for diagnosing toxoplasmosis. Studies performed in different countries reported that seropositive rate of the disease

confirmed by Dye test were between 0 to 74 per cent. For example; this rate was found as 7.7, 9, 17.8, 74 and 15.2 per cent in Czech Republic (10), Canada (14), Germany (13), Italy (16) and North America (8), respectively. The prevalence obtained in current study (7.5%) was similar with that rate determined in Canada and Czech Republic, but lower than that in Italy, North America, and Germany..

The first report on toxoplasmosis in horses in Turkey was studied by Weiland and Dalchow (15) in 1970. Weiland and Dalchow determined seroprevalence of the disease as 14.3%, using Dye test. No study on toxoplasmosis in horses in Turkey was undertaken until 1996. After that date, several reports of toxoplasmosis in horses using Dye test were conducted in Turkey. The seroprevalence of *T. gondii* antibodies were between 1.8 to 8.3 per cent in these studies (1-4,11,12,17).

It is possible to compare the results of this survey with previous published studies, because the same method (DT) were used. İnci et al. (11,12) found antibodies in 1.9 % of the 103 horses from Gemlik and 10.4 % of the 67 horses from Kayseri. Several researchers (3,4,17) found antibodies against *T. gondii* in horses at the rate of 8.3, 8.2 and 2 per cent in Ankara province, respectively. Aktaş et al. (1) found antibodies in 6.4 % of the horses from Sultansuyu Agriculture Unit in Malatya. Aslantaş et al. (2) found antibodies in 1.8 % of the 111 horses from Kars. According to the results of the studies mentioned above, various prevalence rate of toxoplasmosis in horses were obtained at different regions in Turkey. Possible causes of different results may be originated from differences in age, breed, and environmental conditions.

In conclusion; high prevalence of *T. gondii* antibodies using DT were determined in thoroughbred Arabian mares from Şanlıurfa region.

Table 1. Seroprevalence of Toxoplasmosis in the province of Şanlıurfa with regard to age

Groups	The number of tested animals	The number of seropositive animals	%	Seropositivity titers	
				1/16	1/64
2- 5 age group	34	2	5,8	-	2
5 > age group	59	5	8,4	2	3
Total	93	7	7,5	2	5

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