ESTABLISHING AND MAINTAINING THE HEALTH STATUS OF THE EQUINE POPULATION OF THE UNITED ARAB EMIRATES FOR INTERNATIONAL COMPETITION HORSES

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Abstract

Since 1993 the Central Veterinary Research Laboratory has conducted serological tests on equine notifiable diseases, and in 1997 the European Union granted approval to CVRL for conducting import/export tests. For a decade, CVRL has tested 22,212 serum samples for equine notifiable diseases including African horse sickness (AHS), equine infectious anaemia (EIA), dourine, glanders and equine viral arteritis (EVA). The ELISA for AHS detected 300 reactors out of 14,631 sera, all of which were vaccinated horses mainly from South Africa and Spain. One of 15,663 serum samples tested positive with the Coggins test for EIA; this stemmed from a pre-import positive horse. The complement fixation test for dourine and glanders revealed 11 and 27 positive reactors from 12,535 and 12,376 horses, respectively; they were considered to be cross-reactions. The serum neutralisation test for EVA detected 142 reactors from 5,724 serum samples which stemmed from vaccinated horses, and horses tested positive prior to import. It can be concluded that the UAE is free of equine notifiable diseases, and that disease surveillance in the form of serological testing is essential for disease control in any country.

Introduction

In 1993 the United Arab Emirates (UAE) was granted approved status for the importation of horses from the UAE by the European Union (Wernery *et al.* 1999). Since then, enormous financial investment in racecourses and endurance facilities throughout the country has been made, and 5 flatrace World Cups, one World Endurance Championship and 4 World Most Preferred Endurance Rides have successfully taken place. A very high standard of horseracing in the UAE has been achieved, and horses from this region have competed with enormous success throughout the world. In November 1997, the Tripartite Group of countries (France, Ireland and the United Kingdom) gave approval to the Central Veterinary Research Laboratory (CVRL) for conducting pre-export tests for horses being exported from the UAE to other countries. Since then, CVRL has successfully performed 7 quality assessments, and has tested many equine sera, the results of which are shown in this paper.

Materials and methods

Blood samples from each horse were collected from the jugular vein into vacutainers and brought to the CVRL, where they were spun down and tested. All tests were performed according to the international trade regulations laid down by the Office International des Epizooties (OIE 2000).

African horse sickness

Test: Enzyme linked immuno sorbent assay (ELISA). Antigen and ELISA reagents were purchased from the Institute of Animal Health, Pirbright, UK, supplied by BDSL.

Glanders

Test: Complement fixation test (CFT). Antigen and controls were purchased from c.c.pro/Germany.

Dourine

Test: CFT. Antigen and controls were from Aimes, Iowa, USA.

Equine infectious anaemia

Test: Agar gel immunodiffusion test (AGID) according to Coggins. Antigen and controls were from IDEXX, USA.

Equine viral arteritis

Serum neutralisation test (SNT) was carried out according to Senne *et al.* (1985). Virus strain:

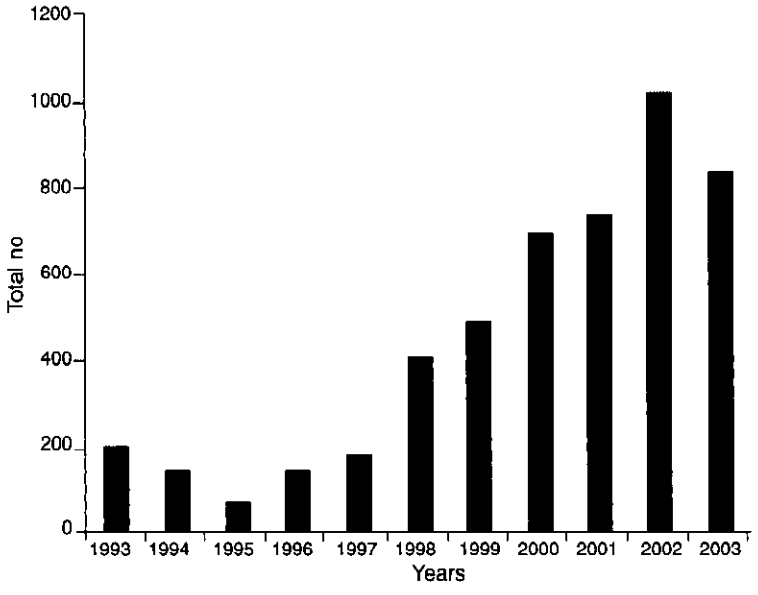

Fig 1: Consignments of equine serum samples sent to CVRL during a period of 10 years.

Bucyrus was purchased from Weybridge and the positive serum control from Kentucky, USA. The test was performed on rabbit kidney cell culture (RK) 13 purchased from the Veterinary Faculty in Munich.

Results

The serological results of 4 different equine notifiable diseases and EVA are shown in Tables 1 and 2. The total consignments of equine serum samples over a period of 10 years are listed in Figure 1, and Figure 2 shows the origin of equine sera tested at CVRL in 2003. Figure 3 shows the growth in horse movements to and from the USA.

Discussion

A progressive and significant increase in the volume of international horse movement and trade has been observed over the last 30 years, which is largely due to the growing prosperity of the equine industry in many countries. In this respect, the UAE is no exception. Not surprisingly, this growth in international movement has enhanced the risk of spread of a range of equine infectious diseases, the best example being equine influenza, which is responsible for major epidemics in previously naïve populations of horses throughout the world. Reliable disease surveillance and reporting are crucial in achieving

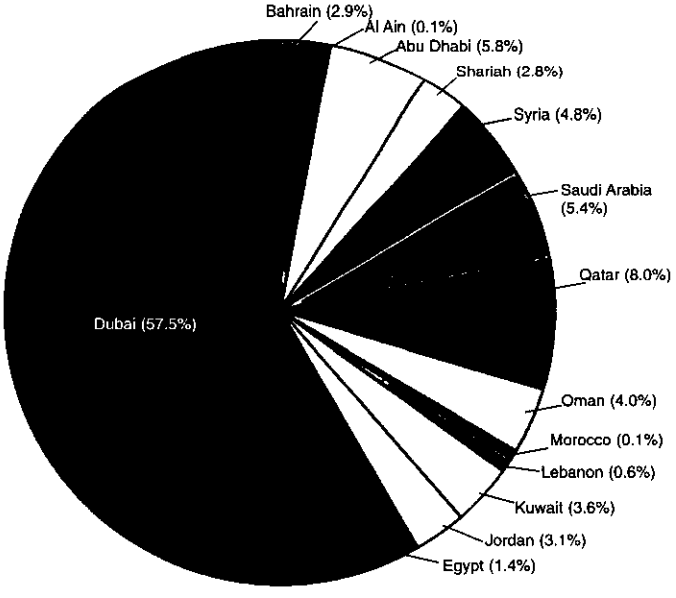

Fig 2: Percentage of equine samples tested at CVRL for notifiable diseases from different countries, including UAE in the year 2003.

TABLE 1: Total samples and serological results of 3 equine notifiable diseases for import-export purposes in a decade

Year	Sample	African Horse Sickness ELISA			EIA AGID (Coggins)			Dourine CFT		
		Total	Pos	Neg	Total	Pos	Neg	Total	Pos	Neg
1993	420	199	6	193	227	0	227	194	1	193
1994	415	95	0	95	138	0	138	93	7	86
1995	269	146	0	146	120	0	120	119	3	116
1996	497	180	0	180	362	0	362	195	0	195
1997	909	604	0	604	481	1	480	206	0	206
1998	2,490	1,413	11	1,402	1,345	0	1,345	1,100	0	1,100
1999	3,124	2,131	7	2,124	1,750	0	1,750	1,508	0	1,508
2000	2,835	2,087	79	2,008	2,512	0	2,512	2,041	0	2,041
2001	3,439	2,374	24	2,350	2,838	0	2,838	2,119	0	2,119
2002	4,276	2,955	124	2,831	3,331	0	3,331	2,714	0	2,714
2003	3,538	2,447	49	2,398	2,559	0	2,559	2,246	0	2,246
Total	**22,212**	**14,631**	**300 ***	**14,331**	**15,663**	**1 ****	**15,662**	**12,535**	**11 +**	**12,524**

* positive horses all vaccinated against AHS
** pre-import positive horse
+ cross-reactions

TABLE 2: Total samples and serological results of glanders and EVA for import-export purposes in a decade

Year	Sample	Glanders CFT			EVA SNT		
		Total	Pos	Neg	Total	Pos	Neg
1993	420	194	0	194	227	2	225
1994	415	103	0	103	146	1	145
1995	269	121	0	121	99	0	99
1996	497	202	0	202	180	8	172
1997	909	175	0	175	218	0	218
1998	2,490	1,068	0	1,068	251	4	247
1999	3,124	1,548	0	1,548	520	2	518
2000	2,835	2,067	8	2,059	582	15	567
2001	3,439	2,128	5	2,123	1,373	44	1,329
2002	4,276	2,711	5	2,706	1,477	47	1,430
2003	3,538	2,059	9	2,050	651	19	632
Total	**22,212**	**12,376**	**27 +**	**12,349**	**5,724**	**142 ***	**5,582**

+ cross-reaction
* vaccinated horses and horses tested positive prior to import

greater international control over the spread of equine infectious diseases (Timoney 1999). Also the UAE is following these recommendations strictly and, for over a decade, no notifiable equine diseases have been observed.

During this time, a total of 4,962 consignments with 22,212 samples were dispatched to CVRL. As can be seen from the tables and the figure, a constant increase of equine serum samples occurred. The AHS-ELISA identified 300 horses which had seroconverted during previous years due to vaccination. The positive horses were from South Africa and Spain. Some of these horses had been vaccinated 10 years earlier underlining the very good sensitivity of the test. All positive horses were tested 4 weeks after the first positive result was obtained. This procedure explains the high number of reactors, and was necessary to diagnose any increase in AHS-titre. No increase of titres were observed in any of the horses investigated. Most of the titres remained at the same level as seen in the first test, and only few dropped slightly.

One of 15,663 horse samples tested for equine infectious anaemia was positive in the Coggins test. It was a pre-import horse which was not allowed to enter the country.

Eleven of 12,535 horse sera tested for dourine with the CFT were positive. It is known that the CFT gives cross-reactions with other members of the *T. brucei* complex (Turnbull *et al.* 2002), but the CFT is still the most commonly used serological technique. The positive sera were also tested against a newly established immunofluorescence antibody test for *Trypanosoma evansi* but with negative results (Wernery *et al.* 2001).

From 12,376 serum samples 27 were positive for glanders using the CFT. Positive glanders cases

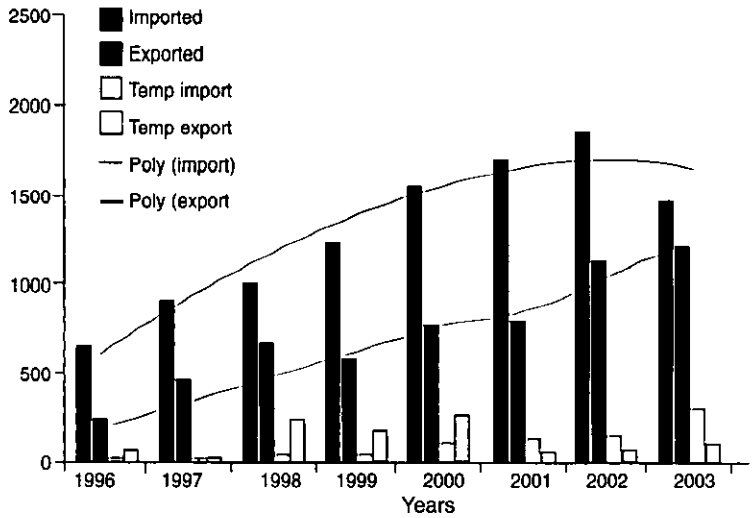

Fig 3: Horse movement over the past 8 years.

have also been found in a serological survey in donkeys. The animals did not show any allergic reactions to an intrapalpebral mallein test, and no lesions were seen at necropsy of suspicious donkeys (Turnbull *et al.* 2002). It is believed, therefore, that all serological reactors were cross-reactions to other Pseudomonas organisms. In horses, this situation must be very similar as in donkeys. Most of the CFT titres declined in horses over several weeks. However, for import/export purposes, the non-specific positive glanders horses are a constant problem.

EVA is not a notifiable disease, but is listed in list B of the OIE. From 5,724 horse sera submitted to CVRL, 142 were positive by SNT. No clinical disease attributable to EVA has been recorded in the UAE. The positive cases found were either horses which had been vaccinated or horses which were detected prior to import.

These results highlight a number of things:

- Continued vigilance and a great deal of testing are required to identify the very small number of potentially infected horses presented for import.
- Cross reactions are a time consuming and logistical headache, with the tests which are currently available, but are part of the cost which has to be paid if a country wishes to be involved in international equine competitions.
- The UAE remains free of equine notifiable diseases and disease surveillance, in the form of serological testing, is essential for disease freedom of a country.

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