Observations on African horse sickness in donkeys in the Sudan

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Summary: Antibody to African horse sickness virus was present in 211 (98%) of 215 apparently healthy Sudanese donkeys. No case of clinical disease had been seen in donkeys. Little was known about the role of donkeys in the epidemiology of the disease.

KEYWORDS: African horse sickness - Donkey - Equidae - Host range - Sudan.

INTRODUCTION

African horse sickness (AHS) is highly endemic in the Sudan. Overt disease has been seen only in horses. The disease is a scourge to horses in various parts of the country, causing great losses in both foreign and local breeds.

Although clinical AHS is known to have existed in the Sudan since 1903 (2), the first virological confirmation was made in 1957 (3), when samples from infected horses were tested by the Onderstepoort Laboratory in South Africa, and found to contain AHS virus type 3. Later, an AHS virus isolate (4) was identified as serotype 9 by the Razi Institute, Iran. In later years, only serotype 9 has been isolated repeatedly and serotyped locally from several disease outbreaks in the country (5; Ali, unpublished data, 1981).

A polyvalent vaccine which was once imported is now produced locally (Ali, unpublished data, 1983). However, when local production is insufficient, a polyvalent vaccine is sometimes imported. Horses are the only species vaccinated against the disease in the Sudan.

So far there has been no information on the role of donkeys in the epidemiology of AHS in the Sudan. The present study is the first to involve the donkey in relation to AHS in the country. Results presented here highlight the role of donkeys in the epidemiology of the disease in the Sudan.

MATERIALS AND METHODS

Reference antigen and antisera

AHS virus group-specific antigen was supplied by the Institute for Animal Health, Pirbright, England. The reference antiserum was obtained from horses 28 days after vaccination with a polyvalent vaccine.

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Test serum samples

A total of 215 serum samples was collected from apparently healthy adult working donkeys, from different localities in Khartoum Province. Samples were inactivated at 56°C for 30 min and stored at -20°C until used.

The agar gel immunodiffusion (AGID) test

The micro AGID test, using standard microscope slides, was carried out as described by Abu Elzein (1). One percent Noble agar (Difco Labs, USA) was used in phosphate buffered saline (PBS) at pH 7.4.

RESULTS

Of 215 samples, 211 (98%) were positive for AHS antibodies.

DISCUSSION

A high percentage of the donkeys examined possessed AHS antibodies in their sera, yet overt AHS has never been seen in donkeys, nor are donkeys vaccinated against the disease in Sudan. Such a situation would suggest that donkeys might have an inherent resistance to AHS or that they undergo some form of subclinical infection. During AHS outbreaks in horses in specific geographical regions in Sudan, donkeys are never affected despite their close proximity to horses. On the other hand, we do not know whether donkeys act as a reservoir of virus from which horses are affected.

These results should encourage further country-wide serological surveys to be conducted on donkeys, to examine the incidence of antibodies to AHS virus.

Donkeys are seldom moved from one province to another in the Sudan, so any additional information would reflect the disease situation in donkeys in the particular province or region.

The epidemiological peculiarities of AHS in the Sudan have not been studied yet, and vital information is missing. Suggested studies are as follows:

- isolation of AHS virus from apparently healthy donkeys
- experimental infection of donkeys with virulent AHS virus strains
- estimation of the duration of maternal immunity in the donkey
- the insect vectors that transmit the virus should be identified and meteorological factors governing the spread of the disease (which seems to be seasonal) should be studied
- it should be determined whether the insect vectors have preferential feeding habits, such as feeding on one particular animal species.

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Résumé : Des anticorps vis-à-vis du virus de la peste équine ont été décelés chez 211 ânes du Soudan apparemment sains sur 215 examinés, soit 98 %. Aucun cas de maladie clinique n'avait été observé chez les ânes. Le rôle de ces animaux dans l'épidémiologie de la maladie est mal connu.


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Resumen: De los 215 asnos de Sudán examinados, se detectaron anticuerpos al virus de la peste equina en 211 animales aparentemente sanos, es decir en un 98 %. No se había observado ningún caso de enfermedad clínica en los asnos. El papel de estos animales en la epidemiología de la enfermedad no se conoce bien.

PALABRAS CLAVE: Asnos - Equidos - Huéspedes - Peste equina - Sudán.

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REFERENCES


2. ANON. (1903). – Annual reports, Veterinary Department, Sudan Government.

