

COMPARATIVE EVALUATION OF VARIOUS DIAGNOSTIC TECHNIQUES FOR *TRYPANOSOMA EVANSI* IN NATURALLY INFECTED CAMELS

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Introduction

Camels provide humans with milk, meat, wool and leather as well as other purposes. Trypanosomiasis in camels was considered the most economically important protozoal disease (5). The incidence of the disease in Egypt was 1.4% (4). Lastly, it has been accepted by several authors that parasitological diagnosis is commonly used in active trypanosome infection, but in chronic disease, the number of parasites in blood is low, so microscopic examination become useless.

The aim of the present study is to evaluate the commonly used diagnostic methods as well as the recent techniques used in diagnosis of Surra in camels under the Egyptian environmental conditions.

Materials and methods

A total number of 980 camels of both sexes (570 under 2 years and 410 between 2-8 years old) from different localities in Egypt were clinically examined with special attention to signs related to *Trypanosoma evansi* infection.

The samples collected from animals were whole blood, serum and blood smears. Mice inoculation test was done according to (2). Thymol turbidity test was conducted according to the method of (3). Detection of *Trypanosoma evansi* antibodies using ELISA was carried out according to (9). Determination of circulating antigens was done by using Suratex test as described by (6).

Results

It has been reported that only 180 animals showed the clinical signs of illness. The clinical signs reported were rise in body temperature, weakness, rough coat, severe emaciation and edematous swelling at some parts of the body especially hind limbs. Some diseased animals showed pneumonia, and others were with mites infestation.

The microscopic examination of the blood films revealed *Trypanosoma evansi* in 57 (5.82%) camels, including 16 (2%) healthy camels and 41 (22.78%) diseased camels.

Thymol turbidity test indicated that the Sera of 120 (12.24%) camels showed positive results that were higher as compared with that detected by blood smear examination. By mice inoculation test, the number of parasitized camels was 69 (43.95%), table 1.

ELISA test revealed that 99 (63.1%) camels gave positive results. Suratex test showed that 80 (50.96%) camels gave positive results for circulating antigens of *Trypanosoma evansi*.

Discussion

The reported clinical signs of illness on animals of the present work were similar to that reported by (4). Variations in the prevalence of the disease among camels in Egypt may include rate of exposure, availability of infected camels, the insect reservoir, seasons as well as variation in sensitivity and specificity of different diagnostic tools.

The parasitemia denotes acute infection of the disease (8). On the other hand, in chronic infection, parasitemia is very low; therefore, blood smear examination can not be relied on (7). In addition, in chronic phase of the disease, there was a tendency for the parasite to invade the tissues, thus it may be either scanty or totally absent in blood of infected camels (1). The thymol turbidity is a serochemical and non-specific test for diagnosis of trypanosomiasis in camels. By mice inoculation test, the parasite will propagate in mice and become easily detectable (1).

In spite of the high positivity of ELISA for detection of *Trypanosoma* antibodies among camels, but it seems to be of a little application where the antibodies persist in the circulation for long periods even after cure (6).

Our results denote that Suratex test is more sensitive than the other tests used.

Conclusion

- 1- Detection of antibodies by ELISA does not necessarily mean that trypanosome is present.
- 2- Detection of *Trypanosoma evansi* antigens (Suratex) in the blood of infected camels even when the parasite cannot be detected in blood by other means makes this test as more suitable and effective in diagnosis.

Table 1. Prevalence of *Trypanosoma evansi* infection among camels using parasitological examination and thymol turbidity test

Animals	No. of animals	Results of positive tests	
		Parasitological	Thymol turbidity
Apparently healthy	800	16 (2.0%)	9 (1.13%)
Diseased	180	41 (22.78%)	111 (61.67%)
Total	980	57 (5.82%)	120 (12.24%)

Table 2. Correlation between the different diagnostic techniques used.

Infectious status	No.	Parasitological Examination	Antibody-ELISA	Suratex
Confirmed positive by MI	69 (43.95%)	57 (82.6%)	68 (98.6%)	69 (100%)
Confirmed negative by MI	88 (56.05%)	- (0.0%)	31 (35.2%)	11 (12.5%)
Total	157	57 (36.3%)	99 (63.1%)	80 (50.96%)

MI = Mice inoculation

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