DISEASES CAUSED BY TRYPANOSOMA EVANSI, A REVIEW

G.J. LOSOS
Veterinary Research Department, Kenya Agricultural Research Institute, P.O. Box 32, Kikuyu, Kenya.

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ABSTRACT


The literature on the diseases caused by Trypanosoma evansi is reviewed and the gaps in the available information are emphasized. Trypanosoma evansi, on the basis of combined similarities in morphology, biological behaviour, and to some degree based on geographical distribution, is a species closely related to and probably originating from T. brucei. The distribution of T. evansi is very wide in the Old and New World and it is transmitted by biting flies and vampire bats. It has a patchy distribution in any region and new foci of infection have a high incidence. Diagnosis is made on demonstration of trypanosomes, biochemical tests detecting increase in serum proteins, and on specific serological tests. The clinical signs vary with the acuteness of the syndrome, often being characterized by a chronic course with lack of pathognomonic signs. There is very little information on the pathology of the diseases in various species of animals, but the lesions appear to be similar to those caused by T. brucei and are associated with the distribution of trypanosomes in solid tissues. Immunological studies have been limited primarily to serology in connection with diagnostic procedures. Laboratory models have been studied and the syndromes are similar to those produced by T. brucei. Chemotherapy is varied and to some degree dependent on the species of host. More information on the incidence and severity of diseases is required to identify priorities for further research.

INTRODUCTION

Diseases caused by Trypanosoma evansi have a wide distribution in both the New and Old World. However, majority of the literature on trypanosomiasis of animals which has been published over the last 30 years has been on the African
varieties transmitted by the tsetse flies. The purpose of this review is to summarize the present state of our knowledge based on the more readily available literature, and to draw attention to the gaps in our knowledge. Recently some of the new research has been briefly reviewed (Mahmoud and Gray, 1980). Hopefully the review will stimulate in the future more research on *Trypanosoma evansi*.

**ETIOLOGY**

*Trypanosoma evansi* is a species belonging to the subgenus *Trypanozoon* and causes disease syndromes which in the Old World are commonly referred to as Surra, but also have other local names depending on different regions and countries. It has now been accepted that in South America, the diseases referred to as Murrina, Derrangadera, and Mal de Caderas, are caused by trypanosomes indistinguishable morphologically from *T. evansi*, and it has been proposed that the collective name, American Surra, should be used (Gutiérrez, 1958).

The most complete historical account of the discovery of *T. evansi* and its spread throughout the world was given by Hoare (1972). In the early part of this century, it became clearly evident, following the original description, that surra-like diseases were very widely spread. Their occurrence in various localities gave rise to new names for *T. evansi*, and these trypanosomes were thought to be new species and subspecies based on, host restriction, peculiarities of the diseases, geographical distribution, and minor morphological differences. Hoare (1940, 1950, 1956, 1955, 1967) concluded that there was neither morphological nor biological basis for accepting the division into different species and subspecies. This conclusion has been further supported by the historical fact of importation of *T. evansi* into various regions of the world, for example South America, where the organisms were initially given the status of different species.

*Trypanosoma evansi* has been considered to be a different species from *T. brucei* primarily on the basis of morphology and to some extent on some of its biological characteristics. *Trypanosoma evansi* has been described as being monomorphic as opposed to *T. brucei* which is pleomorphic. However, in additional studies this has been shown not to be a criteria by which these two organisms can be distinguished. Although in many strains of *T. evansi* stumpy forms have been rarely observed, pleomorphism has been observed recently in the camel, horse, and donkey (Godfrey and Killick-Kendrick, 1962; Leach, 1963a & b; Killick-Kendrick, 1964). It can be concluded, that although *T. evansi* is more often likely to be monomorphic, there are some strains with a high degree of pleomorphism. The monomorphism of *T. evansi* may be related to its mechanical transmission, a characteristic also observed with