

# APPARENT PREVALENCE OF EQUINE DOURINE IN THE KHOMAS REGION OF NAMIBIA

FF KUMBA, B CLAASSEN and P PETRUS

Faculty of Agriculture and Natural Resources, Department of Animal Science, University of Namibia,  
Private Bag 13301, Windhoek, Namibia

## ABSTRACT

A 15-year record of horse sera from the Khomas region, tested by the Dourine/Complement Fixation Test at the Central Veterinary Laboratory in Windhoek, before clearing the respective animals for participation in competitive sports and export, was subjected to statistical analysis. The range of percentage positive, taken as the apparent prevalence of Dourine for the region, during the period of study, was 0–29.09% and the average regional level apparent prevalence was 8.33%. These figures were thought to be lower than the real situation, due to some bias in the sampling criteria. Positive sera for Dourine were also reported from all other regions of the country. For a more effective control of the disease, it was recommended that the epidemiology of Dourine in Khomas and other commercial farming regions be investigated and regional serological-surveys be enforced all over Namibia.

## INTRODUCTION

Dourine is an insidious venereal infection of equine species caused by the protozoon parasite *Trypanosoma equiperdum* (Radostits et al., 1994). The disease is clinically characterized by inflammation of external genitalia, cutaneous lesions and nervous involvement. Natural transmission of the infection is almost entirely by coitus. The source of infection may be an infected male animal or a healthy male acting as a physical carrier after serving an infected mare. Dourine was first clinically diagnosed in Namibia in 1914 and it is believed to have been introduced into the country by German settlers. Outbreaks of the disease are notifiable by law in Namibia, but compulsory testing of susceptible animals followed by slaughter and extermination of positive cases (Derbyshire and Nielsen, 1997) is not enforced. No serological-survey of equine populations has been undertaken for Dourine in Namibia and so the magnitude and pattern of spread of the infection remains unclear. The equine population of the country, consisting principally of 57 000 horses and 166 000 donkeys (Directorate of Veterinary Services, 1997) and contributing in various ways to the socio-economic well-being of many individuals in terms of transport, animal power, entertainment, beef cattle husbandry and as an important export commodity to the Southern African market, therefore, remains at risk. The findings of a retrospective study, based on results of Dourine tests carried out during a 15-year period in the Central Veterinary Laboratory (CVL), Windhoek, are represented here. It is also attempted to shed light on the prevalence and risks of Dourine amongst horses mainly in the Khomas region and to speculate on the overall situation in Namibia.

## MATERIALS AND METHODS

The CVL handles all serological diagnostic tests for Dourine in Namibia. The Complement Fixation Test (CFT), also known as Dourine test, is the test of choice at the CVL. All racehorses and those destined for export must be certified free of Dourine by the CVL. The animal owner meets the cost of Dourine tests performed at the CVL and undertakes to eliminate those animals of which sera test positive for the presence of anti-trypanosomal antibodies. This explains why it is mainly the richer commercial farmers, who breed horses for sport and export, who send sera for testing at the CVL. In this study, records of dourine/CFT on equine sera received from the Khomas region between 1985 and 1999, were examined. The number of animals, of which sera were tested, represented the sample size for the region. The equine population figures for the region, which appear to have changed little during the last 15 years, are 4 500 horses and 1 900 donkeys (Directorate of Veterinary Services, 1997). The sample size required to estimate Dourine prevalence in horses at 99% level of confidence with an error of estimation of <10%, was calculated for the Khomas Region. The apparent prevalence of Dourine in the region was calculated as the percentage of positive cases for all sera tested. This could not be calculated for other regions in the country, because the number of sera received from the regions was too small for statistical analysis.

## RESULTS

The study showed that only horse sera are sent for Dourine tests at the CVL, in Namibia. Except for the Omaheke Region, where few communal farmers were known to send equine sera for testing, the bulk of sera received at the CVL came from commercial farms. The sample size, required to estimate Dourine prevalence in horses at 99% level of confidence with an error of estimation <10%, was found to be 51 animals for the Khomas region. The calculated yearly prevalence of Dourine in the region between 1985 and 1999 is represented in Table 1. Accordingly, the overall average apparent prevalence of Dourine amongst horses in the Khomas Region, was calculated as 8.33%. It is obvious that the incidence of Dourine has tended to fluctuate from year to year in the Khomas region. Although not discussed here, the few observations of other regions, made by this study, pointed to a similar trend.

## DISCUSSION

The study showed that Dourine was widespread amongst horse populations all over Namibia. In the Khomas Region,

Table 1. Apparent prevalence of Dourine in the Khomas Region

Year	Horses treated	Horses positive	Percentage positive
1985	63	1	1.59
1986	368	96	29.09
1987	380	42	11.05
1988	328	17	5.18
1989	263	10	3.8
1990	271	11	4.06
1991	198	6	3.03
1992	181	19	10.5
1993	193	11	5.7
1994	143	12	8.39
1995	76	7	9.21
1996	148	0	0
1997	204	17	8.33
1998	107	4	3.74
1999	175	5	2.86
<b>Total</b>	<b>3098</b>	<b>258</b>	<b>8.33</b>

the only region for which available data was statistically analyzable, the overall apparent prevalence of the disease was determined to be 8.33%. This level of prevalence is probably lower than the real situation, due to a certain level of bias in the kind of sampling criteria on which this study depended. Not only were sera submitted for testing predominantly from the commercial farms, but even at farm level, it would seem that mainly horses destined for competitive sports or export, were routinely tested for Dourine as demanded by the regulations. It is obvious that such animals would be expected to be physically fit and in a good state of health. Older and other weaker animals, much more likely to harbour infectious agents like *T. equiperdum*, were probably not subjected to the same rigorous checking. African strains of this parasite have been shown to more often give rise to the in-apparent and chronic forms of Dourine (Radostits et al., 1994). In neighbouring Botswana, the overall national level of Dourine prevalence was found to be 9.0% and between 0-20% in some individual districts (Masupu and Majok, 1998).

It is difficult to convincingly explain why Dourine remains endemic and at an elevated level amongst horses in the Khomas and other commercial regions of Namibia since mating is strictly controlled amongst animals raised on

commercial farms. It might be important to reinvestigate the epidemiology of the disease under the peculiar farming circumstances in these regions. More accurate epidemiological information would probably serve as a good basis for revisiting established control protocols and sensitizing farmers to its importance. Serological-surveys by regions are also recommended for the rest of Namibia in order to arrive at a reliable nationwide prevalence of Dourine. Results obtained with the dourine/CFT, as used in the CVL, are likely to be accurate for most of Namibia since no other trypanosomal species are expected to occur and cause antigen/antibody cross-reactivity. For the extreme north eastern regions, where trypanosomiasis is known to occur, it might be necessary to adopt more specific serological-testing approaches (Williamson et al., 1988; Wassall et al., 1991; Bishop et al., 1995).

#### ACKNOWLEDGEMENTS

We are grateful to the Director of the Central Veterinary Laboratory, Dr. O. Hübschle, for permission to investigate the Dourine test records of the laboratory. Our sincere thanks go to Ms. G. Zaire and all staff of the serologically department of the CVL. Statistical analysis of the data was done by Mr. C. Mahindi, Department of Statistics, University of Namibia.

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