

Spatial distribution of African Animal Trypanosomiasis in Suba and Teso districts in Western Kenya

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Abstract

Background: Studies on the epidemiology of African Animal Trypanosomiasis (AAT) rarely consider the spatial dimension of disease prevalence. This problem is confounded by use of parasitological diagnostic methods of low sensitivity in field surveys. Here we report a study combining highly sensitive and species specific molecular diagnostic methods, and Geographical information system (GIS) for spatial analysis of trypanosome infection patterns, to better understand its epidemiology. Blood samples from 44 and 59 animals randomly selected from Teso and Suba districts respectively were screened for trypanosomes using PCR diagnostic assays. Spatial distribution of the positive cases was mapped and average nearest neighbour analysis used to determine the spatial pattern of trypanosome cases detected. Findings: Trypanosome prevalence of 41% and 29% in Suba and Teso districts respectively was observed. *T. vivax* infections were most prevalent in both areas. Higher proportions of *T. brucei* infections (12%) were observed in Suba, a known sleeping sickness foci compared with 2% in Teso. Average nearest neighbour analysis showed the pattern of trypanosome infections as random. An overlay with tsetse maps showed cases lying outside the tsetse infested areas, mostly being cases of *T. vivax* which is known to be transmitted both biologically by tsetse and mechanically by biting flies. Conclusion: These findings suggest a need to design control strategies that target not just the biological vector tsetse, but also the parasite in cattle in order to clear the possibly mechanically transmitted *T. vivax* infections. There is need to also review the accuracy of available tsetse maps.