ABSTRACT

Trypanosoma brucei rhodesiense is the causative agent for Rhodesian human African trypanosomiasis. The disease is considered acute, but varying clinical outcomes including chronic infections have been observed. The basis for these different clinical manifestations is thought to be associated with a combination of parasite and host factors. In the current study, Trypanosoma brucei rhodesiense strains responsible for varying infection outcomes were sought using mouse model. Clinical HAT parasite isolates were subjected to PCR tests to confirm presence of the serum resistance associated (SRA) gene. Thereafter, four T. b. rhodesiense isolates were subjected to a comparative pathogenicity study using female Swiss white mice; the parasite strains were compared on the basis of parasitaemia, host survival time, clinical and postmortem biomarkers of infection severity. Isolates identified to cause acute and chronic disease were compared for establishment in insect vector, tsetse fly. The mouse survival time was significantly different (Log-rankp = 0.0001). With mice infected with strain KETRI 3801 exhibiting the shortest survival time (20 days) as compared to those infected with KETRI 3928 that, as controls, survived past the 60 days study period. In addition, development of anaemia was rapid in KETRI 3801 and least in KETRI 3928 infections, and followed the magnitude of survival time. Notably, hepatosplenomegaly was pronounced with longer survival. Mouse weight and feed intake reduced (KETRI 3801 > KETRI 2636 > EATRO 1762) except in KETRI 3928 infections which remained similar to controls. Comparatively, acute to chronic infection outcomes is in the order of KETRI 3801 > KETRI 2636 > EATRO 1762 > KETRI 3928, indicative of predominant role of strain dependent factors. Further, KETRI 3928 strain established better in tsetse as compared to KETRI 3801, suggesting that transmission of strains causing chronic infections could be common. In sum, we have identified Trypanosoma brucei rhodesiense strains that cause acute and chronic infections in mice, that will be valuable in investigating pathogen - host interactions responsible for varying disease outcomes and transmission in African trypanosomiasis.

Keywords: African trypanosome; Pathogenesis; Sleeping sickness; Trypanosoma brucei rhodesiense.; Virulence.