Abstract

We evaluated Mastomys natelensis rat as an animal model for Rhodesian sleeping sickness. Parasitaemia, clinical and pathological characteristics induced by T. b. rhodesiense isolates, KETRI 3439, 3622 and 3637 were compared in Mastomys rats and Swiss white mice. Each isolate was intra-peritonially injected in mice and rat groups (n=12) at 1×10(4) trypanosomes/0.2mL. Pre-patent period (PP) range for KETRI 3439 and KETRI 3622-groups was 3-6 days for mice and 4-5 days for rats while for KETRI 3637-infected mice and rats was 5-9 and 4-12 days, respectively. Pairwise comparison between PP of mice and rats separately infected with either isolate showed no significant difference ($p>0.05$). The PP's of KETRI 3637-infected mice were significantly ($p>0.01$) longer than those infected with KETRI 3439 or KETRI 3622, a trend also observed in rats. The second parasitaemic wave was more prominent in mice. Clinical signs included body weakness, dyspnoea, peri-orbital oedema and extreme emaciation which were more common in rats. Survival time for KETRI 3439 and 3622-infected groups was significantly ($p<0.05$) longer in mice than rats but similar in KETRI 3637-infected groups. Inflammatory lesions were more severe in rats than mice. All mice and KETRI 3622-infected rats had splenomegaly, organ congestion with rats additionally showing prominent lymphadenopathy. KETRI 3439-infected rats showed hemorrhagic pneumonia, enteritis with moderate splenomegaly and lymphadenopathy. KETRI 3637-infected rats had the most severe lesions characterized by prominent splenomegaly, lymphadenopathy, hepatomegaly, enlarged adrenal glands, organ congestion, generalized oedemas, gastroenteritis, pneumonia and brain congestion. KETRI 3637-infected Mastomys is a suitable model for studying pathophysiology of HAT.