

*Brief Communication*

STUDIES ON THE PREVALENCE AND EFFECT  
OF TRYPANOSOMA LEWISI INFECTION IN FINNISH RATS

It is fully justified to call rats a menace to public health owing to their role as carriers of various infective agents. Investigations concerning the named role of this species have also contributed in shedding more light onto the apathogenic or only slightly pathogenic parasites in the rat populations.

The most common and biologically perhaps most interesting blood parasite of the rat is *Trypanosoma lewisi*. Its common occurrence and relative harmlessness give the investigator excellent opportunities for various studies on trypanosomiasis. Despite of its general nonpathogenicity *T. lewisi* does not live in perfect symbiosis with the rat; an infection in suckling rats (25—30 days of age or younger) may cause a serious disease (*Herrick & Cross* 1936, *Duca* 1936, *Soulsby* 1968) whereas older rats remain healthy supposedly on account of rapidly forming antibodies, the trypanocidal lytic ones and the reproduction inhibiting ablastins (*Taliaferro* 1932, 1938; *Soulsby*). In exceptional cases some slight pathogenicity even to man has been demonstrated (*Johnson* 1933).

The prevalence of trypanosome infection in rat populations varies considerably, according to literature from 7 to 90 % (*Tschuchiya & Rector* 1936, *Mitscherlich & Wagener* 1970). The distribution of *T. lewisi* is obviously global, even if to my knowledge there are not reports available from all countries concerning its presence.

The following statistics on the prevalence of *T. lewisi* infection in Finnish rats were derived from two investigations. The results from these investigations with regard to the prevalence of *Leptospira icterohemorrhagica* and *Trichinella* infections have already been published (*Rislakki & Salminen* 1955, *Rislakki & Vasenius* 1970).

The rats were caught in southern Finland, most of them in Helsinki (*Rislakki & Salminen*, *Rislakki & Vasenius*). They were caught alive and as soon as possible subjected to the laboratory

tests. Simultaneously with the obtaining of blood samples for the *Leptospira* investigation from the rats sacrificed by narcosis, microscopic examinations for *T. lewisi* were carried out on microscope slides from uncoagulated blood. From some of the rats also blood smears were prepared which were fixed with methyl alcohol and stained by Giemsa. From the material the following results were registered or calculated:

1. Frequency of infection a) in females and b) in males.
2. The abundance of trypanosomes in blood samples (+++ = abundantly, ++ = moderately, + = only a few). Occurrence was considered abundant when in average four or more trypanosomes were encountered in each microscopic field.
3. The weights of the trypanosome positive rats as compared to the negative rats.

The results are given in three tables. Out of the 152 rats investigated 36.2 % turned out to be demonstrably infected with *T. lewisi*. The average weight of the positive rats was somewhat lower than the weight of the negative ones.

The limited material of the present study thus shows that *T. lewisi* infects rats in Finland and indicates that the infection might be rather prevalent. The lower weight of the group found

Table 1. Prevalence of *Trypanosoma lewisi* infection in 152 rats.

Sex	Number of rats	Average weight g	<i>Trypanosoma lewisi</i> positive
♂	68	240	29
♀	74	192	21
?	10	217	5
Total	152	216	55 (36.2 %)

Table 2. Abundance of the trypanosome in 30 rats studied more carefully.

Sex	Abundantly (= +++)	Moderately (= ++)	Only a few (= +)
♂	3	6	5
♀	8	2	1
?	1	3	1
Total	12	11	7

Table 3. Average weights of the rats.

Infected with <i>Trypanosoma lewisi</i>			Not infected		
sex	number of rats	average weight g	sex	number of rats	average weight g
♂	29	241	♂	40	264
♀	21	195	♀	52	240
?	5	261	?	5	210
Total	55	217		97	238

parasitemic as compared with the nonparasitemic one suggests a slight pathogenic effect by *T. lewisi*. In order to confirm this suggestion investigation of a larger material would be needed.

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