Trypanosoma (Herpetosoma) longiflagellum Sp.N. FROM THE TOMB BAT, Taphozous nudiventris, FROM IRAQ

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Trypanosoma (Herpetosoma) longiflagellum Sp.N. FROM THE TOMB BAT, *Taphozous nudiventris*, FROM IRAQ

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Abstract: Trypanosoma (Herpetosoma) longiflagellum sp.n. (Protozoa: Trypanosomatidae) from a bat, *Taphozous nudiventris*, from Iraq is described. The trypanosome measures 24.0 to 34.2 μm (mean 26.4 μm, SD 2.5) in total length, 13.8 to 18.2 μm (mean 15.2 μm, SD 1.0) in body length, is 1.5 to 2.9 μm (mean 2.0 μm, SD 0.3) in breadth and has a free flagellum of 10.2 to 16.0 μm (mean 11.2 μm, SD 1.6). The nuclear index is 1.4 to 2.1 (mean 1.7 SD 0.1) and the kinetoplastic index is 1.5 to 2.6 (mean 1.9, SD 0.2). This is the second report of a bat trypanosome belonging to the subgenus *Herpetosoma* and the first report of trypanosomes from bats from Iraq.

INTRODUCTION

Trypanosomes from Asia rarely have been reported and no records exist from Iraq. During a small survey of bats, trypanosomes of several subgenera were found in the blood.

MATERIALS AND METHODS

Two species of bats, *Pipistrellus kuhli* and *Taphozous nudiventris*, were caught in Baghdad and Numaniya, respectively. Blood was obtained by cardiac puncture for the preparation of Giemsa-stained thin blood smears and for the inoculation of NNN diphasic blood-agar culture media. Giemsa-stained impression smears prepared from lung, heart, liver and spleen were examined for flagellates. Formalin-fixed organs, routinely prepared for histologic examination, sectioned at 6 to 8 μm and stained with Haematoxylin and Eosin, also were examined. Each section was examined for 20 min, before being considered negative.

Measurements of the trypanosomes were obtained from camera lucida drawings with the aid of a pair of calibrated dividers.

RESULTS

All of 12 *P. kuhli* harbored a *Schizotrypanum* and all of the 14 *T. nudiventris* harbored a trypanosome belonging to the subgenus *Megatrypanum*. In the thin blood smears of two of the *T. nudiventris*, a slender and medium sized trypanosome belonging to the subgenus *Herpetosoma* was found. This trypanosome differed in structure and in staining properties from the larger *Megatrypanum*. Only 12 well-stained forms of the smaller trypanosome were available for description.

Description of *Trypanosoma longiflagellum* sp.n. (Fig. 1)

This trypanosome is represented by moderately pleomorphic forms in blood smears. Most have a drawn out, pointed posterior end, but in some it is rather stout and blunt. Measurements vary from 24.0 to 34.2 μm (mean 26.4 μm, SD 2.5) in total length, 13.8 to 18.2 μm (mean 15.2 μm, SD 1.0) in body length (without free flagellum) and .1.5 to 2.9 μm (mean 2.0 μm, SD 0.3) in breadth. The nucleus is 1.5 to 3.3 μm (mean 2.1 μm, SD 0.3) long and the distance from the posterior end of the body to the middle of the nucleus is 7.2 to 11.2 μm (mean 9.2 μm, SD 0.5). The distance from the

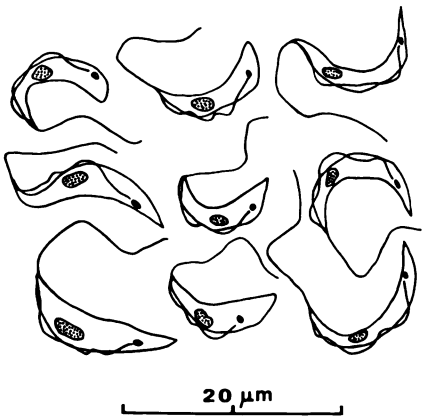

FIGURE 1. Blood stream forms of **Trypanosoma longiflagellum** n.sp.

anterior end of the body to the middle of the nucleus is 4.0 to 8.0 µm (mean 6.2 µm, SD 0.7). The membrane is narrow, with a few undulations and a long free flagellum of 10.2 to 16.0 µm (mean 11.2 µm, SD 1.6) is present. The nucleus has a slightly anterior position (nuclear index is 1.4 to 2.1, mean 1.7, SD 0.1). The kinetoplast is at a distance of 2.6 to 4.0 µm (mean 3.2 µm, SD 0.3) from the posterior end of the body and at 2.9 to 7.3 µm (mean 4.9 µm, SD 0.8) from the middle of the nucleus (kinetoplastic index is 1.5 to 2.6, mean 1.9, SD 0.2). In Giemsa-stained preparations the cytoplasm is greyish pink and the well-defined nucleus is dark violet in colour. One to three large dark volutine granules are present in the anterior part of the body and myoneme-like striations are absent.

Host: *Taphozous nudiventris*

Location: Blood.

Locality: Numaniya, Wasit Province; 145 km southeast of Baghdad, Iraq.

Prevalence: Two of 14 bats.

In the stained preparations of the cultures of the blood of bats infected with *T. longiflagellum*, no forms differing from the multiplication stages of *Megatrypanum* could be detected. No multiplication stages of flagellates were found in the histologic sections.

DISCUSSION

Following the criteria of Hoare,[3] the trypanosome belongs to the subgenus *Herpetosoma* because of its medium size, the shape of the posterior end of the body, the size and position of the kinetoplast and the narrow and slightly convoluted undulating membrane. Although most *Herpetosoma* possess a pointed posterior end, some individuals may have a blunt posterior end, e.g.: *T. (H.) blanchardi, T. (H.) evotomys, T. (H.) microti* and *T. (H.) musculi.* The only trypanosome of bats probably belonging to the subgenus *Herpetosoma* is *T. (H.) lineatum* described from *Vampyrops lineatum* from Venezuela.[2] This trypanosome measures 16.6 to 20.5 µm (mean 19.5 µm) in total length, and the free flagellum of 3.0 to 5.0 µm is considerably shorter than the free flagellum of *T. longiflagellum.* Only a few trypanosomes of the subgenus *Herpetosoma* possess a free flagella longer than 13 µm (*T. conorhini* from rats, *T. coutinhoi* from Brasilian pacas, *T. perodictici* from African anthropoid apes and *T. theileri* from cattle and other Artiodactyla).[3] None of the latter trypanosomes resemble *T. longiflagellum.* The only other trypanosome recorded from Asian bats is *T. vespertilionis* from Malaysia.[1] To the best of my knowledge no other trypanosomes have been described from bats belonging to the genus *Taphozous.*

REMARKS

Although the new trypanosome is somewhat variable in size and morphology, the presence of two different undescribed species of *Herpetosoma* with a long flagellum seems unlikely.

The possibility that *T. (H.) longiflagellum* represents a stage of the *Megatrypanum* (*T. heybergi*-like), present in the same bats, is discarded not only because of the differences in morphologic structures but also because of the striking differences in staining properties. The *Megatrypanum* trypanosomes stain very rapidly to show a dark marine-blue with

marked cytoplasmatic striations in the anterior part of the body, usually overlapping the very faintly-colored pinkish nucleus.

Volutine granules never have been detected in the *Megatrypanum,* and the short free flagellum becomes visible only after a prolonged time of staining. The syntype and para syntype slides will be deposited in the U.S. National Parasite Collection, Beltsville Parasitological Laboratory, Maryland 20705, USA.

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