

قسم : الطفيليات .
كلية : الطب - جامعة أسيوط .
رئيس القسم : أ.د. / أحمد محمد مندور .

أتوكسوبلازما (لانكتيرلا) كولمبي نوع جديد في الحمام
المنزلي كولمبا ليفيا في أسيوط

أحمد مندور ، عبدالرحمن محمد ، فوزى عبدالسلام

وجد الباحثون سيوروزيتات نوع جديد من اللانكتيرلا في كرات الدم البيضاء
للحمام المنزلي وذلك لأول مرة في أسيوط ، وتم عمل دراسة مورفولوجية لهذا
النوع ، وقد وجد أن نسبة الإصابة بهذا النوع تربعو على ٧٥٪ وقد تم وصف الاطوار
الموجودة لهذا النوع في الدم .

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ATOXOPLASMA (LANKESTRELLA) COLUMBAE Sp. Nov.
IN THE DOMESTIC PIGEON CLUMBA LIVIA
IN ASSIUT PROVINCE
(With One Figure)

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(Received at 10/9/1986)

SUMMARY

Lankestrella columbae sporozoites were described for the first time in white blood cells of the domestic pigeon (Columba livia). The infection with this parasite reached about (5.7%). The blood stages were described and illustrated in the text.

INTRODUCTION

According to LEVINE (1961), the parasite now known to be sporozoites of Lankestrella is found frequently in the lymphocytes and other blood cells of wild birds. They had been thought-out to be Toxoplasma but GARNHAM (1950) showed that they were definitely not related to the genus Toxoplasma and therefore called them A.toxoplasma. EL-NAFFER et al. (1979) described 2 new species of Lankestrella in cold blooded animals, while BAKER et al. (1959) described Lankestrella corvi in the red blood cells and bone marrow of the English rook Corvus f.frugilliquis.

Several surveys on blood protozoan parasites of domestic pigeons had been carried out in Egypt.

In Assiut, MAKHLOUF (1975) in her survey in pigeons found only Haemoproteus and a case of Trypanosoma avium. ABDEL-SALAM (1978) in his survey did not find any blood parasite more than Haemoproteus in the domestic pigeon of Assiut.

The life cycle of A-tooplasma is still unknown. However, BOX (1970) was able to show that feeding the English sparrow (Passer domestica) on oocysts resembling those of Isoospora lacazei gave rise to infections with organisms morphologically indistinguishable from A-toxoplasma. Similarly she showed that transfer of liver from birds infected with A-toxoplasma produced Isoospora lacazei oocysts.

MATERIAL and METHODS

Eighty eight pigeons were examined in order to detect any blood parasites. Thin blood films were fixed by methanol and stained with Giemsa's stain. In case of pigeons infected with Lankestrella, 0.1 cc of heparinized blood from the wing vein injected intraperitoneally into laboratory mice. Impression smears from liver, bone marrow, spleen, lung and brain of infected pigeons were fixed in methanol, stained with Giemsa's stain searching for tissue stages.

RESULTS

Out of 88 pigeons examined during the present work only five (5.7%) were found infected with Lankestrella. The sporozoites occur in the lymphocytes and monocytes. They are typically crescentic or sausage shape with one end rounded and the other end pointed or attenuated resembling Toxoplasma trophozoites. It stains weakly, so that it is often difficult to differentiate their cytoplasm from that of the host cell. They measure 3.64 U length by 1.04 U width (average 3.38 x 1.04 U). The nucleus lies near the rounded ends (Plate I). No tissue stages were detected in impression smears taken from the internal organs and bone marrow. No pigment was detected in the cytoplasm. The cytoplasm was faint red in colour. There was no lacuna surrounding the parasite.

Examination of peritoneal fluid from laboratory injected mice revealed negative results for Toxoplasma. Also, the serum proved free from antibodies against Toxoplasma using Sabin-feldman test.

The examined pigeons show percentage of infection with Haemoproteus columbae (77.7%).

DISCUSSION

The morphological characters of the blood stages described here coincide much with members of the family Lankestellidae, genus Lankestrella LABBE (1894) with the following characters, small size, curved body unequal pointed end and vesicular nucleus (MANSOUR and MOHAMED, 1982). As regards the vacuole surrounding parasite or lacuna surrounding the sporozoites of Lankestrella described by EL-NAFFER et al. (1979) in Lankestrella stendodactyli and Lankestrella ptyodactyli from reptiles in Assiut. Also, this vacuole was described in L.corviin English rooke and also by GARNHAM et al. (1962) when studying fine structure of L.garnham in the English sparrow and not observed in L.bufois by MANSOUR and MOHAMED (1962). From the previously mentioned characters it appears that the presence of a vacuole surrounding the parasite is not always present in all species of genus Lankestrella.

The Present parasite in the present investigation can not be identified as plasmodium because of the absence of the pigment production. In addition the present parasite occur in the lymphocytes and monocytes (white blood cells). It cannot be identified as Toxoplasma, since the latter differs in many respects.

- 1- No pseudocysts were found.
- 2- The present parasite was not pathogenic to laboratory mice.
- 3- Sera of pigeons did not contain antibodies against Toxoplasma when Sabin-feldman test was applied.

LAIRD (1959) proposed to emend the diagnosis of A.toxoplasma as follows :

Benign to mildly pathogenic parasites, typically sausage shaped occurring in avian monocytes and lymphocytes often causing pronounced indentation of the nucleus of the latter. Their string reaction and absence of well defined periplast rendering it difficult to differentiate their cytoplasm from that of the host cell. Multiplication by binary fission, few (usually 2) division products per host cell, not transmissible by subinoculation.

According to these criteria the present parasite belongs to the Genus A.toxoplasma (Lankestrella) it is evident from literature that most records probably referable to A.toxoplasma concern passerine birds. There does not appear to be any previous record of infection in the domestic

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pigeon (Columba livia). For this reason it appears that it is true to report on A.tooplasma (Lankestrella) in the Egyptian pigeon. For the timebeing all recorded new species of A.toxoplasma (Lankestrella) are proposed according to the host in which the infection was recovered.

Accordingly the present parasite is proposed to be named A.toxoplasma (Lankestrella) columbae Sp. nov. since it is recovered in the domestic pigeon Columba livia with the following characters.

- **Host:** domestic pigeon.
- **Locality :** Assiut, Upper Egypt.
- **Sporozoites Length :** 3.8 U, width. 1.3 U (averaged 3.38 x 1.04 U) inhabit the lymphocytes and monocytes.

- Type material is deposited in the Department of Parasitology, Faculty of Medicine, Assiut University.

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RESEARCH REPORT IN THE

The first part of the report is devoted to a general survey of the situation in the field of research in the various countries of the world. It is followed by a detailed study of the work of the various research institutes and the results of their work. The report concludes with a summary of the main findings and a list of references.

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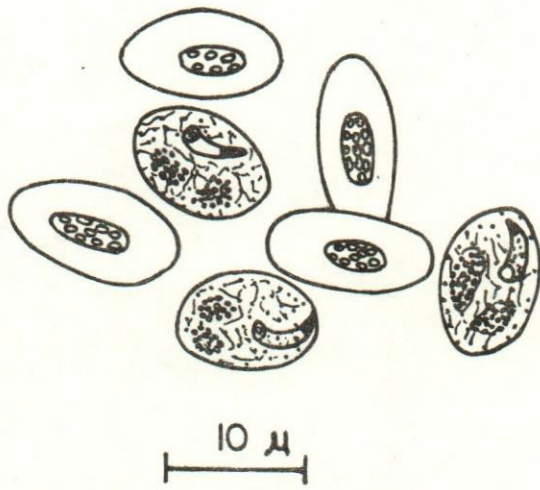


Fig. (1)



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