أتوكسوبلازما (لاكتيرلا) كوليبى نوع جديد في الحمام المنزلي كوليبى ليفيا في أسوبوط

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وجد الباحثون سبوروتيات نوع جديد من اللاكتيرلا في كرات الدم البيضاء للحمام المنزلي وذلك لأول مرة في أسوبوط ، وتم عمل دراسة مورفولوجية لهذا النوع ، وقد وجد أن نسبة الإصابة بهذا النوع تربو على 7.5% وقد تم وصف الظواهر 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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SUMMARY

Lankestrella columbae sporozoites were described for the first
time in white blood cells of the domestic pigeon (Columbia 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 frugilicus.

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.toxoplasma is still unknown. However, BOX (1970) was able to show
that feeding the English sparrow (Passer domesticus) on oocysts resembling those of Isospora
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
Isospora 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 labo-

datory 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 cresenic or sausage shape with one end rounded and the other end pointed or atenuated 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 in coincide much with members of the family Lankestrellidae, genus Lankestrella LABBE (1894) with the following characters: small size, curved body unequal pointed end and vesicular nucleus (MANSOUR and MOHAMED, 1962). 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 pteryodactyli from reptiles in Assiut. Also, this vacuole was described in L.corvin English rooko and aloby GARNHAM et al. (1962) when studying fine structure of L.garnham in the English sparrow and not observed in L.bufonis 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 cannot 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 idenation 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.toxoplasma (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 μ, width 1.3 μ (averaged 3.38 x 1.04 μ) inhabit the lymphocytes and monocytes.
- **Type material** is deposited in the Department of Parasitology, Faculty of Medicine, Assiut University.

REFERENCES

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