RESEARCH COMMUNICATION

Morphological evidence for infection of impala, Aepyceros melampus, platelets by a rickettsia-like organism

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ABSTRACT


Ultrastructural studies revealed the presence of a parasite, believed to be Ehrlichia platys, in the blood platelets of impala. At the time of blood sampling all the animals appeared healthy. This is the first report on the presence of this rickettsia in these animals, previously described in canine platelets.

Keywords: Electron microscopy, Ehrlichia platys, impala, parasite, platelets, rickettsia

Ehrlichia platys is a rickettsial parasite known to infect canine platelets, causing thrombocytopenia (Harvey, Simpson & Gaskin 1978; Baker, Simpson, Gaunt & Corstvet 1987; Bradfield, Vore & Pryor 1996). It is platelet specific and does not appear in other blood cells, organs or tissues in the body, although the antigen has been found in the liver, spleen and bone marrow during severe infection (Simpson & Gaunt 1991). The diagnosis of infected platelets in blood smears by light microscopy is often complicated because the granularity of the platelets makes it difficult to observe E. platys inclusions.

Recently, while conducting an investigation into the morphology of impala, Aepyceros melampus, platelets from the southern part of the Kruger National Park, South Africa, the presence of a rickettsia-like parasite was noted in some of the platelets under investigation. All the animals were examined and declared healthy by a veterinarian at the time the blood samples were taken. The blood samples were immediately fixed in glutaraldehyde and processed for electron microscopy (Du Plessis, Botha & Stevens 1997).

Seven of the 12 animals used in this study displayed morulae with elementary bodies similar to those of E. platys (Jain 1993) in many of their platelets when viewed by transmission electron microscope (Fig. 1). Some platelets contained a single subunit micro-organism, while other platelets displayed a morula with more (two to six) subunits, or elementary bodies. Occasionally more than one morula was seen inside a platelet. Each subunit was surrounded by a single membrane, while the whole morula was surrounded by a double membrane. The subunits, varying in size but mostly round to oval shaped, had a fibrillar appearance, often with a small electron-dense granule.

This is the first report of the presence of this parasite, believed to be E. platys, in impala platelets. It is not entirely surprising that the parasite was noted only at the ultrastructural level, as impala platelets are extremely small (Du Plessis et al. 1997), which would make the detection of the parasite on a normal blood smear, viewed by light microscopy, almost impossible. Although the natural mode of transmission of the parasite is unknown, it is believed to be transmitted by a tick (Kontos, Papadopoulos &

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French 1991; Bradfield et al. 1996), but this thought has been questioned by Simpson, Gaunt, Hair, Kocan, Henk & Casey (1991). The impala showed no sign of thrombocytopenia, the typical result caused by E. platys infection in dogs (Harvey et al. 1978; Baker et al. 1987; Bradfield et al. 1996). However, according to Bradfield et al. (1996) thrombocytopenia and parasitemia do not necessarily correlate, as thrombocytopenia occurs only after recent infections. Another possible explanation for the apparently healthy condition of the impala is that these animals are natural hosts of the parasite.

Follow-up studies need to be done to determine whether the latter statement is valid or whether any epidemiological or geographical distribution factors are of importance. Furthermore, serological studies need to be done to verify the identity of the parasite. For this purpose, fresh samples will need to be obtained and studied in the Kruger National Park as all the present material was fixed in glutaraldehyde before leaving the park, as is required by the National Parks Board.

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REFERENCES


