

RESEARCH COMMUNICATION

ATTEMPTED TRANSMISSION OF CANINE EHRLICHIOSIS TO THE VERVET MONKEY (*CERCOPITHECUS PYGERYTHRUS*)

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ABSTRACT

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Blood from a domestic dog infected with *Ehrlichia canis* was injected into 3 adult vervet monkeys *Cercopithecus pygerythrus*. The monkeys did not develop any clinical or haematological signs of disease, nor did they seem to be able to harbour the parasite. Furthermore, neither morulae of *E. canis* nor haematological evidence of ehrlichiosis were seen after these monkeys had been splenectomized. The splenectomized monkeys did, however, develop a severe parasitaemia of their red cells with *Entopolypoides macaci*. They also showed a transient haematuria, mild inappetence and listlessness.

Résumé

TENTATIVE DE TRANSMISSION D'EHRLICHIOSE CANINE AU SINGE VERVET (*CERCOPITHECUS PYGERYTHRUS*)

Du sang d'un chien domestique infecté de *Ehrlichia canis* a été injecté à trois singes vervet adultes *Cercopithecus pygerythrus*. Les singes ne développèrent aucun signe clinique ou hématologique de la maladie ni ne semblèrent capable d'héberger le parasite. De plus, ni les morulae d'*E. canis* ni d'évidence hématologique d'ehrlichiose ne furent observées après que ces singes furent splénectomisés. Les singes splénectomisés développèrent cependant une sévère parasitémie de leurs globules rouges avec l'*Entopolypoides macaci*. Ils montrèrent aussi une hématurie transiente, une anorexie et de la nonchalance.

INTRODUCTION

Canine ehrlichiosis (canine tropical pancytopenia) is essentially a disease of the dog, although other canids such as the wolf *Canis lupus* (Harvey, Simpson, Gaskin & Sameck, 1979), coyote *Canis latrans* (Ewing, Buckner & Stringer, 1964) and wild dog *Lycaon pictus* (Van Heerden, 1979) are also susceptible. Donatien & Lestoquard (1936) reported successful infection of the primate *Macacus inuus*. Their work has not been repeated.

The primate *Macacus inuus* infected by Donatien & Lestoquard (1936), which is probably *Macaca sylvana* Linnaeus, 1758 (= *inuus* Linnaeus, 1766), belongs to the same subfamily, namely Cercopithecinae, as the vervet monkey, *Cercopithecus pygerythrus*. *Macaca sylvana* does not occur in Southern Africa (Dandelot, 1974).

The severe disease following infection in *Macaca sylvana* as described by Donatien & Lestoquard (1936) underlines the necessity for an investigation into the susceptibility of other primates (and thus possibly of man) to this parasite.

MATERIALS AND METHODS

Three mature vervet monkeys and a control, Dog A, were used in this experiment. The monkeys were housed indoors in separate steel cages and were part of a group of monkeys held in captivity for experimental purposes.

Before the vervet monkeys and control Dog A were infected, haematological studies were undertaken and peripheral blood smears of all the experimental animals were examined on 2 occasions. Haematologi-

cal parameters were found to be within the normal range. Blood smears, though negative for *E. canis*, were positive for *Entopolypoides macaci*.

The isolate of *E. canis* used in this investigation was obtained from a 20-week-old mongrel dog showing severe clinical signs of general depression, emaciation, anaemia and enlarged peripheral lymph nodes. Haematological investigation of this donor dog yielded the following results: Hb 106 g/l; RCC: $4,55 \times 10^{12}/l$; Ht: 0,30; WCC: $5 \times 10^9/l$. Peripheral blood smears demonstrated the presence of morulae of *E. canis* in the cytoplasm of monocytes.

Five ml aliquots of blood from this donor dog were injected intravenously into each of the 3 vervet monkeys and into the control Dog A.

The vervet monkeys were inspected daily for signs of disease after infection. Blood smears were made and haematological determinations were undertaken 7 times at regular intervals during the following 28 days.

Twenty-eight days after the infection, blood was collected from the monkeys and 4 ml aliquots were injected intravenously into each of 2 splenectomized Beagle dogs (Dogs B and C).

The temperatures of the control Dog A and of Dogs B and C were taken daily. Blood smears from these animals were examined and haematological investigations were determined at regular intervals for 30 days after infection.

After the subinoculation of blood from the vervet monkeys into Dogs B and C, all 3 monkeys were splenectomized. Blood smears were examined again and haematological studies were undertaken 3 times a week for the ensuing 28 days.

RESULTS AND DISCUSSION

Control Dog A developed clinical signs of disease (a temperature reaction) within 8 days of infection. Morulae of *E. canis* were demonstrated in peripheral

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blood smears 14 days after artificial infection. At 21 days after infection the dog showed mass loss and exhibited signs of listlessness and enlarged peripheral lymph nodes.

We were unable to infect the vervet monkeys with *E. canis*. Even after splenectomy they showed no clinical signs of ehrlichiosis. Blood smears were negative for morulae of *E. canis* at all times and haematological parameters stayed within normal limits.

Dogs B and C showed no sign of disease and peripheral blood smears failed to demonstrate morulae of *E. canis*. This confirmed that the monkeys had been unable to harbour the parasite.

After splenectomy, however, the monkeys developed a high level of parasitaemia with *Entopolypoides macaci*, and all of them developed a transient haematuria, slight inappetence and listlessness. No morulae of *E. canis* were visible in peripheral blood smears and haematological parameters were not typical of ehrlichiosis as in the case of the dog.

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