Feline leishmaniasis due to *Leishmania* (*Leishmania*) *amazonensis* in Mato Grosso do Sul State, Brazil

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Abstract

A case of leishmaniasis in a domestic cat (*Felis domesticus*) is described. The animal showed a single, nodular lesion on the nose and many nodules of different size on the ears and digital regions of all the paws. Diagnosis was made by microscopic detection of amastigotes in Giemsa-stained smears from the lesions. By monoclonal antibodies the aetiological agent was identified as *Leishmania* (*Leishmania*) *amazonensis*, one of the seven species implicated in human leishmaniasis in Brazil. The clinical signs in feline leishmaniasis are unspecific and similar to those observed in other diseases such as cryptococcosis and in sporotrichosis, commonly found in cats. Leishmaniasis should therefore, be added to the differential diagnosis by feline veterinary practitioners and adequate investigations should carried out for dermal leishmaniasis in the area where the feline infection is detected.

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1. Introduction

Dermal leishmaniasis has been reported in humans in almost all States of Brazil. There are at present seven recognised species of *Leishmania* responsible for the cutaneous disease in Brazil, namely: *Leishma-
nia (Viannia) braziliensis; L. (V) guyanensis; L. (V) lainsoni; L. (V) shawi; L. (V) naiffi; L. (V) lindenbergi and L. (Leishmania) amazonensis (Silveira et al., 2002).

The epidemiological profile of cutaneous leishmaniasis in Brazil involves a wide variety of wild and domestic mammalian hosts and different phlebotomine sandfly vectors.

Recently, we examined a domestic cat (Felis domesticus) with nodular lesion on the nose, ears and digital regions and the purpose of the present study is to report a case of feline leismaniasis due to L. (L.) amazonensis in Mato Grosso do Sul State, Brazil.

2. Materials and methods

2.1. Studied subject

In September 2003, a domestic female cat, about 2-year-old, was admitted to a private veterinary clinic in Campo Grande, Mato Grosso do Sul State, Brazil, for examination because of several nodular lesions on its snout, ears and digital regions.

2.2. Parasitological investigation

(a) To confirm the presence of leishmanial amastigotes, smears of aspirations from the nodules were air dried, fixed in absolute methyl alcohol and stained by Giemsa’s method.

(b) In an attempt to isolate the parasite, fine needle aspirations from the nodules were inoculated into the hind feet of two hamsters and in NNN culture medium.

3. Results

3.1. Clinical and laboratory diagnosis

Dermatologic examination of the cat revealed the presence of a single nodular lesion about 2 cm in diameter on the nose and same nodules of different size on the ears and on the digital regions of all the paws (Fig. 1a–c). Emaciation was not observed and there was no evidence of systemic disease. Routine haematological examination revealed only a slight neutrophilic leucocytosis. Serum biochemical values (blood urea nitrogen, creatinine, glucose, alanine–amino transferase and alkaline phosphatase) were normal. Smears made from the aspirations contained numerous amastigotes, both intracellular in macrophages and extracellular (Fig. 2a). The parasites grew well in NNN medium incubated at 24 °C, and numerous promastigotes were microscopically observed after 5 days (Fig. 2b). The strain was isolated and identified as L. (L.) amazonensis with monoclonal antibodies by the indirect immuno-fluorescence/fluorescein-labelled avidin technique (Shaw et al., 1989). After some days the cat presented a severe respiratory insufficiency and then the euthanasia and autopsy were performed. The inoculated hamsters remained in observation at weekly intervals for the development of cutaneous lesions.

4. Discussion

L. (L.) amazonensis causes cutaneous and occasionally “diffuse cutaneous leishmaniasis” in individuals with a faulty cell-mediated immunological system. This disease is not only highly mutilating but also sometimes incurable by the present methods of treatment. Its geographic distribution is typically the Amazon basin but also occurs in the Northeast (Maranhão, Bahia and Ceará); Southeast (Minas Gerais, Espírito Santo and São Paulo); Central West (Goiás, Mato Grosso and Mato Grosso do Sul) and South (Paraná) of Brazil. Its most important wild animal hosts are rodents (Proechimys and Oryzomys) and marsupials (Didelphis, Philander, Marmosa, Caluromys and Metachirus) (Arias et al., 1996; Dedet, 1993; Dorval et al., 2002; Lainson et al., 1994). Occasional infections have been recorded from the fox, Cerdocyon thous and from the rodent, Akodon sp. (Lainson et al., 1994; Tolezano, 1994). Its principal vector Bichromomyia flaviscutellata, a sandfly that is not greatly attracted to man, is present in Campo Grande (Oliveira, 2000).

Cutaneous leishmaniasis in cats (F. domesticus) has rarely been reported in the literature. Mazza (1927, cited by Brumpt, 1936) described the first case; Mello (1940) observed dermal lesions on the nose and ears in a cat in Para State, Brazil; Bonfante-Garrido et al. (1991) reported amastigotes in cutaneous smears from three cats in Barquisimeto, Venezuela; Costa-Durão...
Fig. 1. (a) Tegumentary feline leishmaniasis due to *L. (L.) amazonensis*: a single nodular lesion about 2 cm in diameter on the nose. (b) Tegumentary feline leishmaniasis due to *L. (L.) amazonensis*: same nodules of different sizes on the ear. (c) Tegumentary feline leishmaniasis due to *L. (L.) amazonensis*: same nodules of different sizes on the digital regions of the paws.
et al. (1994) detected a case of leishmaniasis in a domestic cat in Sesimbra, Portugal, Laruelle-Magalon and Toga (1996) reported a cat suffering from this disease, in France, however without identification of the infecting species. Craig et al. (1986) and Barnes et al. (1993), described cases of leishmaniasis due to a parasite of the *Leishmania mexicana* complex, in Texas cats. Feline leishmaniasis due to *Leishmania infantum* has been reported in Southern France and in Italy (Ozon et al., 1998; Poli et al., 2002). Natural infection of domestic cats with *Leishmania* (*Viannia)* and *Leishmania* spp. have been reported in the Metropolitan Region of Belo Horizonte, Minas Gerais and in Rio de Janeiro, Brazil (Passos et al., 1996; Schubach et al., 2003).

The case presented in this paper is, to our knowledge, the first proven case of a cat infected by *L. (L.) amazonensis* reported in Mato Grosso do Sul State, Brazil.

Although natural *Leishmania*-infection appears to be rare or sporadic in the cat, Morsy et al. (1980) found amastigotes in spleen smears from 16 to 78 cats examined in Jordan. So, it is suggested a seroepidemiological study to investigate the seroprevalence of feline *Leishmania*-infection in Campo Grande. The skin alterations in feline leishmaniasis are unspecific.
and can be associated with other dermatites, as in cryptococcosis and in sporotrichosis (Pereira and Coutinho, 2003; Schubach and Schubach, 2000), which frequently occur in cats. As dermal leishmaniasis has been reported in humans in almost all counties of Mato Grosso do Sul States additional diagnostic investigations based on the demonstration of the parasite, should be performed by local veterinary practitioners. It would be of interest to mention that the transmission of *L. (L.) amazonensis* occurs in low, degraded secondary forest, frequently near residential areas, in addition to primary forest. Cats are likely to enter such low, secondary woodland to hunt for rodents and will, therefore, be subjected to the bites of *Bi. flaviscutellata* which abound in this type of vegetation.

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**References**


