

# CLINICAL ASPECTS OF VISCERAL LEISHMANIASIS IN NATURALLY INFECTED DOGS IN THE CITY OF TERESINA, PIAUÍ.

L. MENDONÇA<sup>1</sup>, L.C. ALVES<sup>2</sup>, M.A.G. FAUSTINO<sup>2</sup> & J.R. DE VASCONCELOS<sup>2</sup>

(1) Depto. de Clínica e Cirurgia Veterinária/CCA – Universidade Federal do Piauí - CEP 64049-550;

(2) Depto. de Medicina Veterinária da Universidade Federal Rural de Pernambuco – CEP 52171-900

**SUMMARY:** The clinical signs of Visceral Leishmaniasis were investigated in 42 dogs. The research was carried out in Teresina, PI, where visceral Leishmaniasis is highly endemic. Male and female dogs, with different ages and breed were obtained by Zoonosis Center, two groups of animals were studied. The first of 21 dogs showed a positive parasitological and/or serological test for visceral leishmaniasis and the later, also composed by 21 dogs had negative results. Most of signs were alopecia, nodular disease and onychogryphosis (42.86%) in the positive group

**KEY WORDS:** Clinic, *Leishmania chagasi*, Calazar, Dogs, "Diagnóstico sorológico e parasitológico".

## INTRODUCTION

Canine visceral leishmaniasis or canine calazar has *Leishmania chagasi* as causal agent in the New World. Clinical diagnosis of canine calazar is still very precarious. Many infected dogs do not present clinical signs. Besides, its symptomatology is often similar to that of other diseases. (DEANE & DEANE, 1955; BRENER, 1957; ALENCAR, 1959). Due to the fact that calazar is a pathology of the reticulo-histiocyte system with chronic evolution, the signs observed in the dog may be similar to those seen in man, which include anemia, emaciation, lymphadenopathy and splenomegaly (FONT *et alii*, 1994), hepatomegaly and ophtalmitis (GEORGE *et alii*, 1976). ADLER & THEODOR (1932) stated that the main clinical signs observed are anemia, emaciation, keratitis, skin lesions and alopecia, however, they reported the discrepancy among the symptoms observed and the intensity of infection in the animals of the study. Frequently the signs of cutaneous dermatitis, such as seborrhea, partial alopecia and ulceration are described by ADLER (1964); ISAEV (1966); HERNANDEZ-RODRIGUEZ *et alii* (1987); FERRER *et alii* (1988) and FRANC (1993), however, many dogs may be asymptomatic (ADLER, 1964). Lesions related to hyperkeratosis are mentioned by KAMMERMAN &

BUHLMANN (1965), and to ungual hypertrophy have been reported by HERNANDEZ-RODRIGUEZ *et alii* (1987) and FRANC (1993). Other signs include those observed by ADLER & TCHERNOMORETZ (1946), which describe corneal opacity and ocular discharge caused by the parasitism, and sometimes infection may be restricted to the eyes, causing conjunctivitis (MUSCARELLA *et alii*, 1981), and adjacent regions, causing endophtalmitis and blepharitis (McCONNEL *et alii*, 1970; FERRER, 1992), or keratoconjunctivitis (FERRER, 1992; FRANC, 1993).

Signs related to gastrointestinal disturbances have been described by CORBEIL *et alii* (1976), GEORGE *et alii* (1976) and FERRER (1992), being characterized by chronic diarrhea.

The presence of lymphadenopathy was reported by KEENAN *et alii* (1984) in dogs with visceral leishmaniasis.

## MATERIALS AND METHODS

The experiment was carried out at the Animal Health Laboratory (LASAN), from the Department of Veterinary Clinics and Surgery, Center of Agricultural Sciences, Piauí State University.

Forty-two dogs of both sexes and various ages, belonging to the German Shepherd, Dobermann, "Fila Brasileiro" and crossbred, were used. They were identified based on the phenotypic traits, and proceeding from the Animal Capture Service, Center for Zoonoses Control, Teresina, state of Piauí. Upon arrival at the kennel, the dogs were clinically examined, the clinical record was filled in, and signs that suggested visceral leishmaniasis were observed. Then, blood was harvested for use in the Indirect Immunofluorescence Test with antigen that proceeded from the Fundação Oswaldo Cruz – Biomanguinhos.

The animals were divided into two experimental groups based on the results of the serological tests, being: Group 1, composed by animals with positive serum for the Indirect Immunofluorescence Test (IIF) for *Leishmania chagasi* and Group 2, composed by animals with negative serum reaction in the Indirect Immunofluorescence Test (IIF) for *Leishmania chagasi*.

Additionally, scrapings of normal and injured skin from the region of the muzzle and ear, as well as marrow punch from the crista of the sternum for parasitological confirmation of the presence or absence of *Leishmania chagasi*.

## RESULTS AND DISCUSSION

Clinical signs observed in Group 1 (positive) and Group 2 (negative) animals are presented in Tables 1 and 2.

The results obtained in this study agree with those of ALENCAR (1959), BRENER (1957) and KONTOS & KOUTINAS (1993), when they reported as suggestive signs of CVL in dogs, skin lesions, alopecia, nail overgrowth, weight loss and conjunctivitis.

It is noteworthy that alopecia and onicogriposis were the most frequent signs (90,48%) in the animals of the mentioned group. According to HOMMEL (1978), the hair loss has been explained by the direct action of *Leishmania* sp on the hair follicle

Table 1 - Relative frequency of clinical signs present in dogs from the city of Teresina – Piauí with positive serological and parasitological diagnosis testing for *L. chagasi* (Group 1).

Symptoms	Relative frequency (%)
Alopecia, onicogriposis	9,52
Alopecia, onicogriposis, of ulcers	42,86
Alopecia, onicogriposis, of ulcers, conjunctivitis	4,76
Alopecia, onicogriposis, of ulcers, weight loss	4,76
Alopecia, onicogriposis, ulcers, weight loss, conjunctivitis	4,76
Alopecia, onicogriposis, conjunctivitis	14,30
Alopecia, of ulcers, weight loss	9,52
Onicogriposis, of ulcers	4,76
Onicogriposis, weight loss	4,76

Table 2 - Relative frequency of clinical signs in dogs from the city of Teresina – Piauí with positive serological and parasitological diagnosis testing for *L. chagasi* (Group 2).

Symptoms	Relative frequency (%)
Alopecia	4,76
Alopecia, weight loss	9,52
Alopecia, weight loss, onicogriposis, presence of ulcers	4,76
Alopecia, onicogriposis	14,30
Alopecia, onicogriposis, presence of ulcers	9,52
Alopecia, presence of ulcers, conjunctivitis	9,52
Conjunctivitis	4,76
Onicogriposis	4,76
Onicogriposis, weight loss	14,30
Presence of ulcers	4,76
Asymptomatic	19,04

or by a disturbance in pantotenic acid, due to severe hepatic lesions, or else by the deposition of immune complexes on the basal lamina of the skin, inducing an auto-immune process which determines the occurrence of alopecia.

Abnormal nail overgrowth has been explained by a stimulation of the ungual matrix by the parasite (LESTOQUARD & DONATIEN, 1938). However, MARZOCCHI *et alii* (1985) consider that the apathy of dogs is greatly responsible for the absence of natural nail wear.

In relation to weight loss, CATARSINI (1981), attributes it to the parasitic infiltration that compromises the entire digestive tract.

Nevertheless, signs such as epistaxis, uveitis and locomotion problems mentioned by CORBEIL *et alii* (1976); GEORGE *et alii* (1976) and FERRER (1992), were not observed in the present study.

The non-observation of the symptoms mentioned above might be due to the fact that only 5 to 10% of infected animals show those signs (FERRER, 1992).

Despite the difference between the two groups under study regarding the frequency of symptoms, the fact that all clinical signs observed in the positive animals were also present in negative animals allows for the conclusion that dogs with suggestive signs of CVL should be submitted to serological and parasitological diagnosis tests for confirmation of infection by *Leishmania chagasi*.

## SUMÁRIO

Com o objetivo de verificar os sinais clínicos na leishmaniose visceral canina (LVC) foram examinados 42 cães com sexo, idade

e raças variadas provenientes de Teresina, PI, área com alta endemicidade para Leishmaniose Visceral Canina. Os animais foram capturados pelo serviço de apreensão do Centro de Controle de Zoonoses, os quais foram divididos em dois grupos experimentais. O grupo I foi constituído por 21 animais com sorologia positiva ao teste de IFI e exames parasitológicos positivos para LVC e o grupo II formado por 21 animais com sorologia negativa ao teste de IFI e exames parasitológicos negativos para LVC. Os resultados revelaram ser a alopecia, onicogripose e úlcera de pele os sinais mais comuns em animais com sorologia e exames parasitológicos positivos. PALAVRAS-CHAVE: Clínica, *Leishmania chagasi*, Calazar, Cães, diagnóstico sorológico e parasitológico.

## REFERENCES

- ADLER, S. (1964). Leishmaniosis. *Advances in Parasitol.*, 2:35-96.
- ADLER, S. & TCHERNOMORETZ, J. (1946). Failure to cure natural canine visceral leishmaniasis. *Ann. Trop. Med. Parasit.*, 40:320-324.
- ADLER, S. & THEODOR, O. (1932). Investigations on Mediterranean Kala-zar. VI Canine Visceral Leishmaniasis. *Proc. R. Society of London*, 110:402-412.
- ALENCAR, J.F. (1959). Calazar canino. Contribuição para o estudo da epidemiologia do calazar no Brasil. Tese de Mestrado. Universidade Federal do Ceará, Fortaleza, CE, Brasil. 342 p.
- BRENER, Z. (1957). *Calazar canino em Minas Gerais*. Tese. Belo Horizonte, Faculdade de Medicina da Universidade de Minas Gerais, 90 p.
- CATARSINI, O. (1981). Epidemiologia e manifestazione cliniche della leishmaniosi del cane. *R. Parasitol.*, 44:83-7.
- CORBEIL, L.B.; WRIGHT, J.; SHIVELY, J.N.; DUCAN, J.R.; LAMOTTE, G.B. & SCHULTZ, R.D. (1976). Canine visceral leishmaniasis with amyloidosis: an immunopathological case study. *Clin. Immunol. and Immunopathology*, 6:165-173.
- DEANE, L.M. & DEANE, M.P. (1955). Leishmaniose visceral urbana (no cão e no homem) em Sobral, Ceará. *O Hospital*, 47:113-28.
- FERRER, L. Leishmaniasis. In: KIRK, R.V. & BONAGURA, J.D. (1992). *Kirk's Current Veterinary Therapy XI*. Philadelphia. P. Saunders, p. 266-270.
- FERRER, L.; RABANAL, R.; FONDEVILA, D.; RAMOS, J.A. & DOMINGO, M. (1988). Skin lesions in canine leishmaniasis. *J. Small Anim. Pract.*, 29:381-388.
- FRANC, M. (1993). La leishmaniose canine. *Rec. Méd. Vet.*, 5/6:433-437.
- GEORGE, J.W.; NIELSEN, S.W.; SHIVELY, J.N.; HOPEK, S. & MROZ, S. (1976). Canine leishmaniasis with amyloidosis. *Vet. Pathol.*, 13:365-373.
- HERNANDEZ-RODRIGUEZ, S.; GOMEZ-NIETO, C.; MARTINEZ-GOMEZ, F. & GUTIERREZ-PALOMINO, P. (1987). Aspectos clínicos de la leishmaniosis canina. *Rev. Ibér. Parasitol.*, Extr.: 61-66.
- HOMMEL, M. (1978). The genus *Leishmania*: Biology of the parasites and clinical aspects. *Bull. L'Inst. Pasteur*, 75:5-102.
- ISAEV, L.M. (1966). The pathogenesis and clinical course of canine leishmaniasis. *Uzbekistan, Medskaya Parazit.*, 35:250-262.
- KAMMERMAN, B. & BUHLMANN, L. (1965). Zu linem fall von leishmaniose beim hund. *Schweizer Archiv. Für Tierheilkunde*, 107(7):371-385.
- KEENAN, C.M.; HENDRICES, L.D.; LIGHTNER, L. & JOHNSON, A.J. Visceral leishmaniasis in the german shepherd dog. II Pathology. *Vet. Pathol.*, 21:80-86, 1984.
- KONTOS, J.V. & KOUTINAS, F.A. (1993). Old world canine leishmaniasis. *Comp. Cont. Educ.* 4, 55 (7).
- LESTOQUARD, F. & DONATIEN, A. (1938). Parasitisme de la matrice ungueale dans la leishmaniose générale du chien. *Bull. Soc. Pathol. Exot.*, 31:483-7.
- MARZOCHI, M.C.A.; COUTINHO, S.G.; SABROZA, P.P.; SOUZA, M.A.; TOLEDO, L.M. & RANGEL FILHO, F.B. (1985). Leishmaniose visceral canina no Rio de Janeiro, Brasil. *Cadernos S. Públ.*, 1(4):432-466.
- MCCONNELL, E.E.; CHAFFEE, E.F.; CASHELL, I.G. & GARNER, F.M. (1970). Visceral leishmaniasis with ocular involvement in a dog. *JAVMA*, 156(2):197-203. (1970). In the field: application for the diagnosis of malaria and leishmania. *Acta Tropica*, 45:95-96.
- MUSCARELLA, A.; GALOFARO, V. & MACRI, B. (1981). Studio de un caso di leishmaniosi canina. *Arch. Vet. Italiano*, 32(1-2).

(Received 5 March 1998, Accepted 17 February 1999)