

FELINE LEISHMANIASIS: SEROLOGICAL AND MOLECULAR DETECTION OF AN EMERGENT DISEASE IN A NON-ENDEMIC AREA OF NORTHERN ITALY



Eva Spada¹, Daniela Proverbio¹, Federica Bruno², Germano Castelli², Viviana Valenza², Roberta Perego¹, Luciana Baggiani¹, Fabrizio Vitale².

¹ Dipartimento di Medicina Veterinaria (DIMEVET), Università degli Studi di Milan, via dell'Università 6, 26900 Lodi, Italy

² Centro di Referenza Nazionale per le Leishmaniosi (C.Re.Na.L), Istituto Zooprofilattico Sperimentale (IZS) della Sicilia A. Mirri, Via G. Marinuzzi 3, 90129 Palermo, Italy



POSTER ID: VL1

² federica.bruno@izssicilia.it, Centro di Referenza Nazionale per le Leishmaniosi (C.Re.Na.L), Istituto Zooprofilattico Sperimentale (IZS) della Sicilia A. Mirri, Via G. Marinuzzi 3, 90129 Palermo, Italy

ABSTRACT

In recent decades feline leishmaniosis (FeL) has become an emerging disease, also in non-endemic areas for the canine infection. This study updates the epidemiological status for FeL in cats in northern Italy and compares results with previous studies of the same feline population. Co-infections with feline retroviruses FIV and FeLV were also investigated. Stray, shelter and owned cats from different cities in the Lombardy region of northern Italy, were prospectively randomly sampled between January 2020 and May 2021. A total of 255 cats were tested for *L. infantum*: 240/255 for antibodies by IFAT and 234/255 and 198/255 for Leishmania DNA by PCR on whole blood and lymph nodes, respectively. Rapid ELISA test was used to detect FIV or FeLV infection. Overall, 26/255 (10.2%) cats tested positive for *L. infantum*: in 8/26 cats Leishmania DNA was found in popliteal lymph nodes (Leishmania/ml range from 15 to 60), 6/26 were PCR positive on whole blood (Leishmania/ml range from 5 to 80) and 15/26 IFAT seropositive at titers ranging from 1:80 to 1:320. Two Leishmania infected cats were also FIV+FeLV coinfecting, another was FIV positive and one was FeLV positive. A high prevalence of FeL was found in a non-endemic area of northern Italy, with an increasing trend in infection rates.



Introduction

Feline leishmaniosis (FeL) is an emerging feline disease, with an overall estimated prevalence of 10%. Cats are naturally infected by, and are susceptible to the same Leishmania species that affect dogs and people, but most cases involve *L. infantum* as in the countries in the Mediterranean basin [1]. The Lombardy region (Fig. 1) is not considered endemic for *L. infantum* infection at the present. The aims of this study were to update the epidemiological status for FeL in cats in northern Italy and compares results with previous studies of the same feline population.



Figure 1. Lombardy, region in northern Italy.

Material and Methods

Specific antibodies to *L. infantum* were detected using the IFAT against in-house cultured promastigotes following Office International des Epizooties (OIE) Terrestrial Manual protocol. A variety of biological sample were analyzed by real-time polymerase chain reaction (RT-PCR) assays. Co-infections with feline retroviruses FIV and FeLV were also investigated by ELISA assay.

Table 1. Results of other recent epidemiological studies performed in cats in Northern Italy.

Variable	Spada et al 2014	Spada et al 2016	Spada et al 2020	Current study
Years	2008-2010	2014	2016-2018	2020-2021
Population	233 stray cats	90 stray cats	117 stray cats	255 (160 stray, 43 shelter, 52 owned cats)
FeL overall prevalence	9.0%	12.2%	8.6%	10.2%
IFAT overall seropositivity	21/233 (9.0%)	11/90 (12.2%)	5/102 (4.9%)	15/240 (6.3%)
PCR overall positivity	0 (0.0%)	2 (2.2%)	5/115 (4.4%)	14/234 (6.0%)

Results

Table 1 shows the results of other recent epidemiological studies performed in cats in Northern Italy. The first two studies [2,3] relate to the same population of stray cats and were performed in previous years by the authors of this study. The last two studies [4,5] relate to owned cat populations from cats surveyed in cities located in Northern Italy. Overall, 26/255 (10.2%) cats tested positive for *L. infantum*: in 8/26 cats Leishmania DNA was found in popliteal lymph nodes (Leishmania/ml range from 15 to 60), 6/26 were PCR positive on whole blood (Leishmania/ml range from 5 to 80) and 15/26 IFAT seropositive at titers ranging from 1:80 to 1:320. Two Leishmania infected cats were also FIV+FeLV coinfecting, another was FIV positive and one was FeLV positive. Coinfections or comorbidities are frequently detected in stray cats [2]. The presence of one or more concomitant infection may influence the clinical presentation and presence of laboratory abnormalities, can contribute to a misrepresentation of clinical FeL, influence parasite burden or alter the progression of FeL.

Conclusions

The results of the present study highlight a stable FeL situation among the stray cats in a non endemic area of northern Italy, with an increasing trend in infection rates. Future studies of FeL infection in the same area of northern Italy are needed to clarify whether FeL cases are increasing. Continued monitoring and further studies to investigate whether Leishmania vectors are present in this area are needed.

References

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