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Evaluation of erythrocyte sedimentation rate (ESR) with a point-of-care testing device in cats studied for *Leishmania infantum* and FIV antibodies

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Background

Erythrocyte sedimentation rate (ESR) is a well-known marker of systemic inflammation, largely used in human medicine but scarcely investigated in cats. The gold standard Westergren method used to measure ESR requires specific blood collection tubes with sodium citrate and one milliliter of blood. This is a large volume of blood in case of feline patients, considering that it would only be used to evaluate a single marker of inflammation and it is not appropriate for other laboratory investigations. Recently, ESR measured on EDTA-blood with an automated point-of-care device has been evaluated as a marker of inflammation in cats with chronic kidney disease and in dogs with canine leishmaniosis [1,2]. This study aimed at preliminarily evaluating ESR measures in cats tested for anti-*Leishmania infantum* (Li) and anti-feline immunodeficiency virus (FIV) antibodies.

Materials and methods

One milliliter of EDTA-blood and serum samples from 58 cats, enrolled in a *L. infantum* endemic region (Calabria,Italy), were evaluated. Complete blood count K3-EDTA tubes were used for ESR measurements performed with an automated point-of-care device (MINI-PET, DIESSE, Monteriggioni (SI), Italy) according to the manufacturer's instruction. Serum samples were used to detect anti-*L. infantum* antibodies by immunofluorescence-antibody assay (cut off dilution 1:80) [3] and antibodies against feline immunodeficiency virus (FIV) (SensPERT FeLV/FIV, VetAll, Gyeonggi-do, Korea). Descriptive statistics, Kruskall-Wallis and Mann-Whitney tests were performed (Jamovi 2.3.28) with $p<0.05$ set as threshold for significant difference.

Results

The descriptive statistics of four groups of cats classified based on results of the serological tests are reported in Table 1. A significant difference among the four groups of cats was observed ($p=0.024$). ESR median values of Li positive, FIV positive, and Li-FIV positive cats were higher compared to the antibody-negative group of cats, but a significant difference was detected only with the values of cats with coinfection ($p=0.014$) (Figure 1).

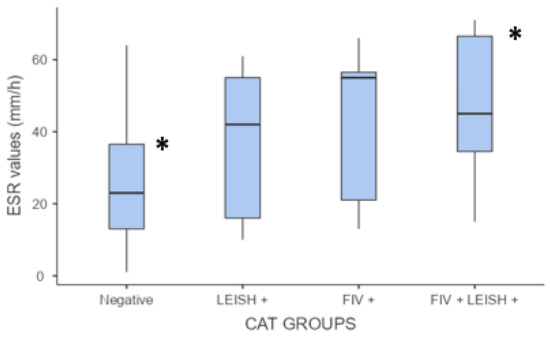

Figure 1. Box plot of ESR values in the four groups of cats considered according to antibody positivity. Negative: antibody-negative to both *L. infantum* and feline immunodeficiency virus (FIV); LEISH+: antibody-positive to *L. infantum*; FIV+: antibody-positive to FIV; FIV+ LEISH+: antibody-positive to both *L. infantum* and FIV. *: significant difference (Mann Whitney test; $p=0.014$).

Table 1. Descriptive statistics of ESR values (mm/h) in cats based on their serological test results (antibody negative, n= 31; *L. infantum* antibody positive, n=13; FIV antibody positive, n=7; *L. infantum* and FIV antibody positive, n=7).

Distribution parameters	Cat serological classification	ESR values (mm/h)
Median	Antibody negative	23
	L. infantum antibody positive	42
	FIV antibody positive	55
	L. infantum and FIV antibody positive	45
Minimum	Antibody negative	1
	L. infantum antibody positive	10
	FIV antibody positive	13
	L. infantum and FIV antibody positive	15
Maximum	Antibody negative	64
	L. infantum antibody positive	61
	FIV antibody positive	66
	L. infantum and FIV antibody positive	71
25th percentile	Antibody negative	13
	L. infantum antibody positive	16
	FIV antibody positive	21
	L. infantum and FIV antibody positive	34
75th percentile	Antibody negative	36
	L. infantum antibody positive	55
	FIV antibody positive	56
	L. infantum and FIV antibody positive	66

Conclusions

We consider these results to be only preliminary because: a) other markers of inflammation were not investigated; b) small numbers of antibody-positive animals were tested for ESR; c) the clinical status of the enrolled cats was not considered. However, the results are encouraging for further studies aiming at differentiating *L. infantum* infected clinically healthy cats from cats with a progressive infection, particularly because the point-of-care device used to measure ESR employs the same EDTA-blood collection tube needed for the complete blood count. This means that the cat hematological evaluation can be integrated with ESR measure without increasing the amount of blood to be taken.

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Conflict of interest: None declared.

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