Hematology revealed mild leukocytosis with mild lymphocytosis, mild monocytosis, eosinopenia, mild reticulocytosis, and mild thrombocytopenia (Table 1). In the biochemistry profile, there were mild hyperglobulinemia, marked elevation of SAA, mild elevations in triglycerides and cholesterol, mild hyperkalemia and decreased iron concentration (Table 1). Serum protein electrophoresis showed polyclonal peaks in the alpha2- and gamma-sections (Figure 2). Testing for FeLV-antigen and FIV-antibodies was positive, each. In the "Feline travel profile" (PCR: *Hepatozoon* spp. and *Dirofilaria* spp.; IFAT: *Ehrlichia* spp., *Leishmania* spp. and *Rickettsia* spp.) the *Leishmania infantum*-IFAT was positive with a titer of 1:4096 and *Rickettsia* with 1:256, all other pathogens were tested negative. The quantitative *Leishmania* spp. PCR was positive with 786 *Leishmania* organisms/ml blood. In cytology, high numbers of intra- and extracellular amastigotes were present (Figure 3). PCR testing for *Rickettsia* spp. and *Bartonella henselae* was negative.

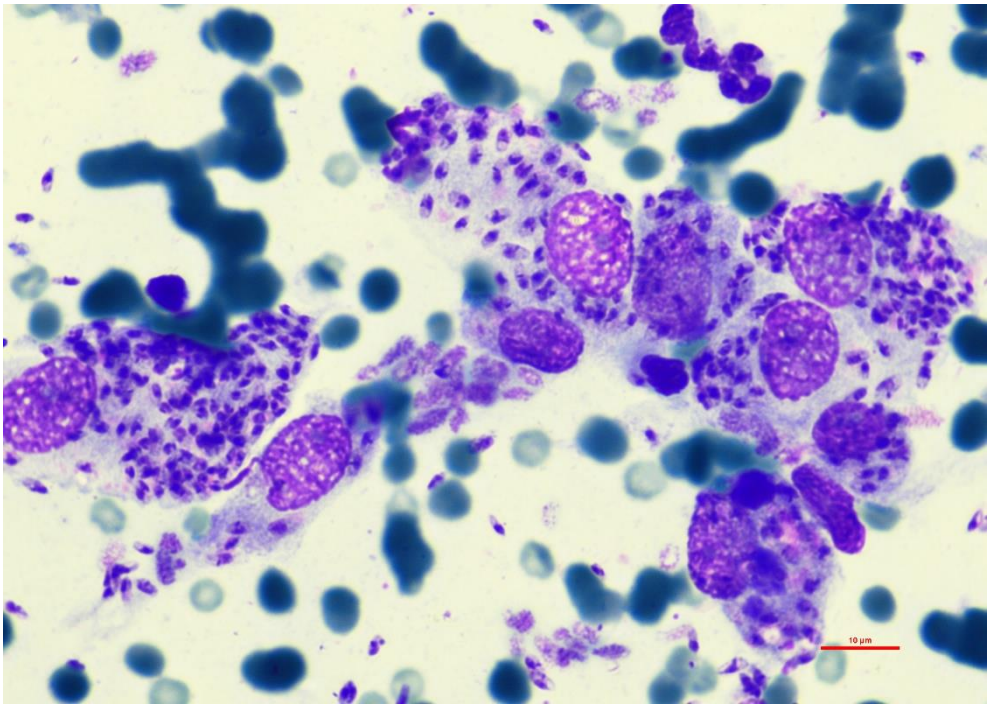

Figure 3: Cytology of ulcerative lesions in a six-years-old European Shorthair Cat imported from Spain to Germany with granulomatous inflammation and high numbers of intra- and extracellular amastigotes of *Leishmania* spp.

Diagnosis

Due to the positive molecular, serological, and cytological detection of *Leishmania* spp., feline leishmaniosis with concurrent uveitis anterior, rhinitis, and ulcerative skin lesions was diagnosed.

Therapy/Outcome

Allopurinol (12.5 mg twice daily orally) was started after diagnosis of feline leishmaniosis. The cat was presented in good condition both on day 48 and 66 and gained weight (3.0 kg at day 48; 3.3kg at day 66). The gingivitis improved and was classified as mild to moderate, and the ulcerative lesions were almost gone at day 48 and not visible any more at day 66 (Figure 4). There were no changes regarding the uveitis anterior. Hematology revealed mild non-regenerative anemia and mild leukocytosis with monocytosis on day 48. On day 66, there was mild regenerative anemia. Leukocytosis and monocytosis was not seen any more. In biochemistry, mild hyperglobulinemia and decreased iron was still present on day 48, but only moderate SAA-elevation (35.2 µg/l) was seen. On day 66, mild hyperproteinemia with moderate hyperglobulinema, mild elevation of glutamate dehydrogenase (GLDH) as well as cholesterol and decreased iron concentration were present. The titer of the *Leishmania* spp. IFAT was still positive but decreased to 1:512 on day 48 and 1:1024 on day 66, as well as the quantitative *Leishmania* spp. PCR with 191 *Leishmania*/ml blood on day 48 and 1 *Leishmania*/ml blood at day 66.

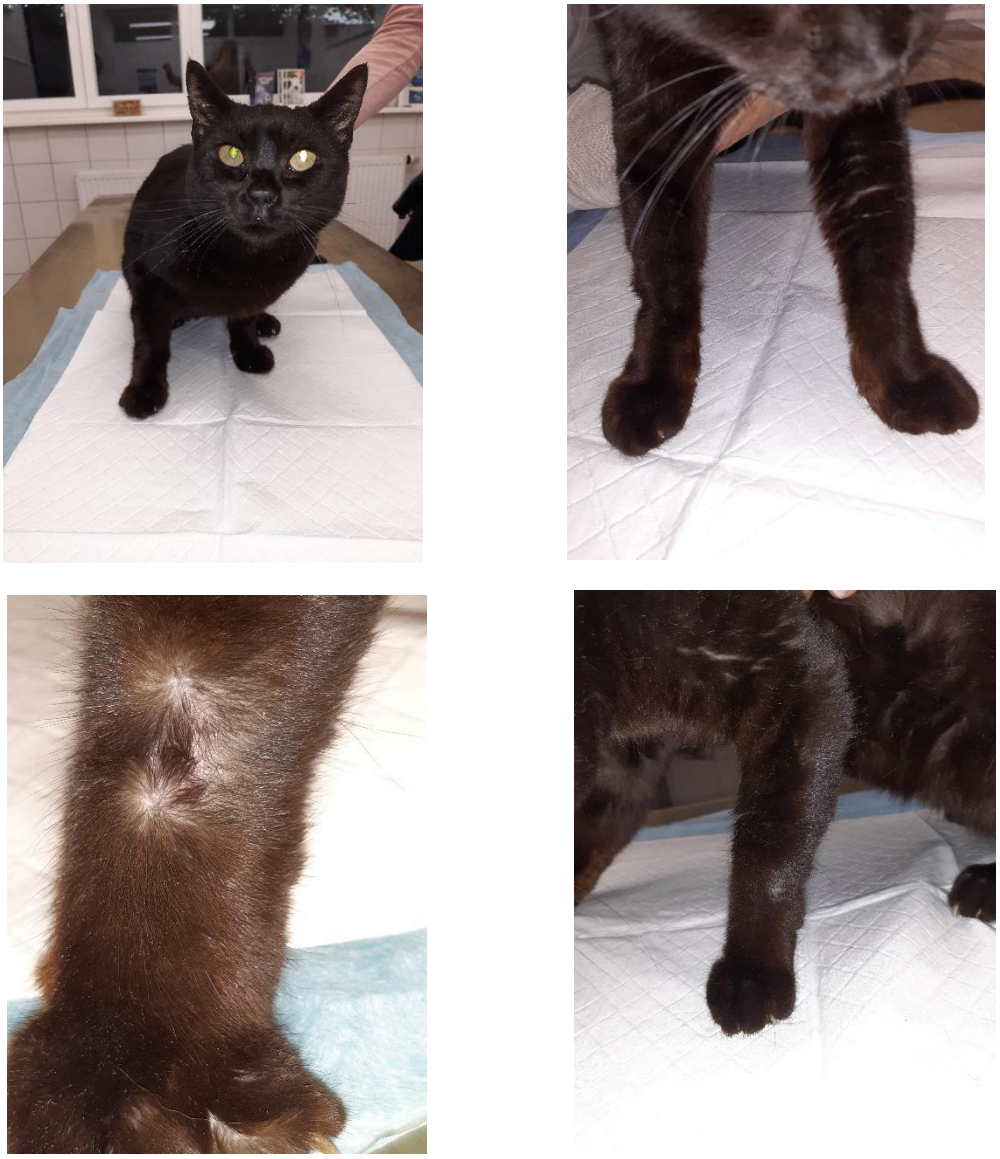

Figure 4: 6-year-old, female spayed European Shorthair Cat imported from Spain to Germany with feline leishmaniosis on day 48

Discussion

Feline leishmaniosis was most often detected in adult cats (median 7 years) from endemic countries especially in the Mediterranean[1,2], which is in accordance with our six-years-old cat imported from Spain, tested positive for FeLV and FIV. In Germany, serological testing revealed 4% out of 624 cats tested positive for *Leishmania* spp. antibodies, all of them being imported from endemic countries.[3] Clinical disease of feline leishmaniosis was associated with an impaired immune response as for example FeLV- and FIV-infection and immunosuppressive treatment.[4-10] Our cat was presented with dermatological and ophthalmological signs

consistent with feline leishmaniosis. Skin or mucocutaneous lesions are the most common clinical signs.[10] In one study, 50% of cases of feline leishmaniosis were diagnosed by cytology.[10] In general, diagnosis is based on molecular, serological, cytological and histological results.[11] In our cat, no histology was performed as the diagnosis was already made by PCR, IFAT and cytology. Cytology is a rapid, inexpensive, and non-invasive procedure for diagnosis especially in cats, however it should be confirmed by serological and quantitative PCR testing, as a combination of tests is recommended for diagnosis.[10]

In most cases, hyperglobulinemia without hyperproteinemia was reported[10], fitting well with the findings in our cat (Table 1). An increase of the alpha-2 fraction and polyclonal gammopathy were reported as the main alterations of the proteinogram in cats with leishmaniosis.[12] It was suggested that the presence of polyclonal gammopathy and elevation of the alpha-2 section could be indicative for acute infection.[12] Nothing is known about SAA as a marker for successful treatment, as the C-reactive protein is in dogs. However, SAA was seen as a useful predictive indicator of prognosis regardless of diagnosis, but no cats with leishmaniosis were included in this study.[13] In our cat, the SAA concentration decreased with improvement of clinical signs, decrease of *Leishmania* in the quantitative PCR and decrease in antibody titres, indicating a potential benefit of using this marker. The mild increase in antibody titres on day 48 and 66 are most likely linked to subjective evaluation of titres in IFAT testing.

Monitoring of therapy includes hematological and biochemistral examinations, serological testing and quantitative PCR testing. Cats with leishmaniosis most often show high antibody levels[14-17], which frequently decrease with successful treatment[14,17,18]. This was also seen in our cat.

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