Sarcoma of viral origin in a cat: a case report

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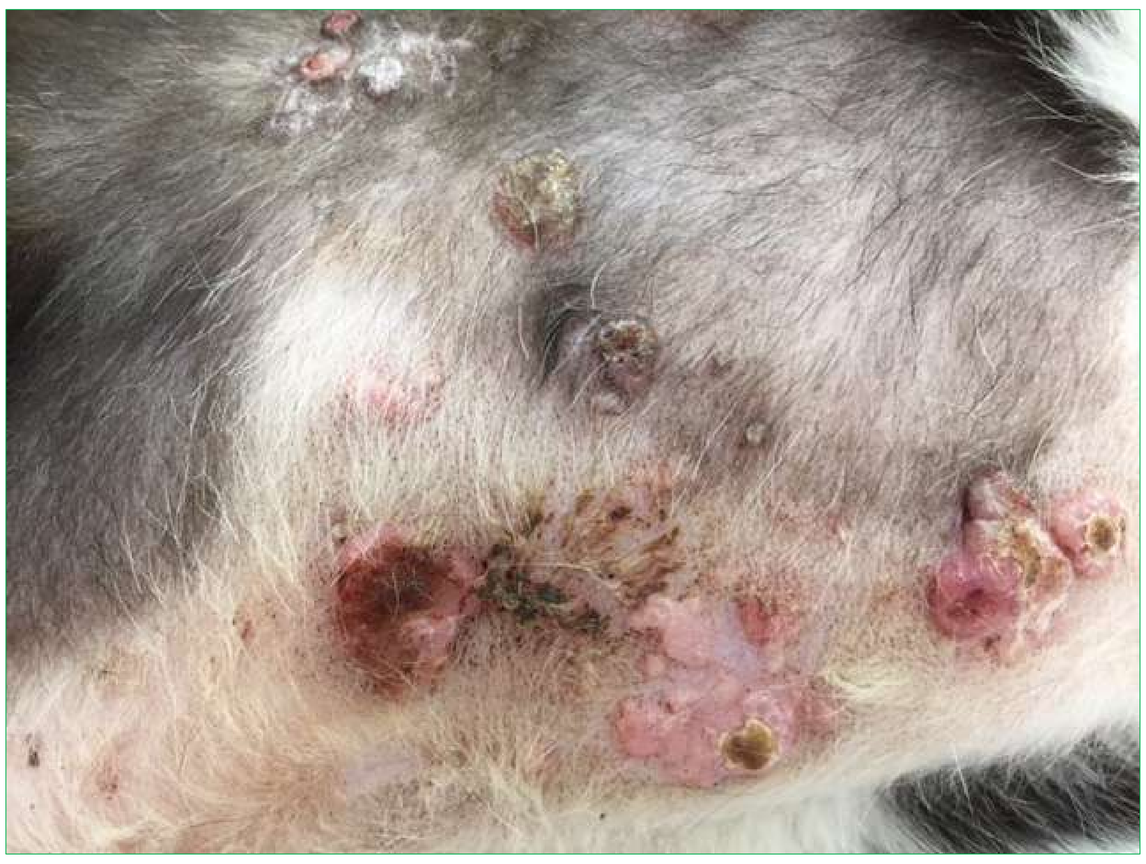
Introduction

Fibrosarcomas are one of the neoplasms most commonly found in skin and soft tissues of dogs and cats. Only 2% of fibrosarcomas of cats are virally induced. Prevalence of infection with feline leukemia virus (FeLV) may affect the prevalence of this tumor. Feline sarcoma virus (FeSV), which requires FeLV for replication and expression, induces progressive multicentric fibrosarcomas in cats under 5 years of age, while older cats tend to have solitary fibrosarcoma unassociated with FeSV.

Case

A 3-year-old European shorthair male cat arrived at the veterinary clinic with multiple slightly elevated, suppurative and crusty lesions located in the abdomen. The cat was neutered and tested one year before of FeLV and FIV with negative results. At cytological examination, mild to severe inflammatory neutrophilic inflammation and fibroplastic changes were observed. Antibiotic and corticoid treatment was performed, with no positive response.

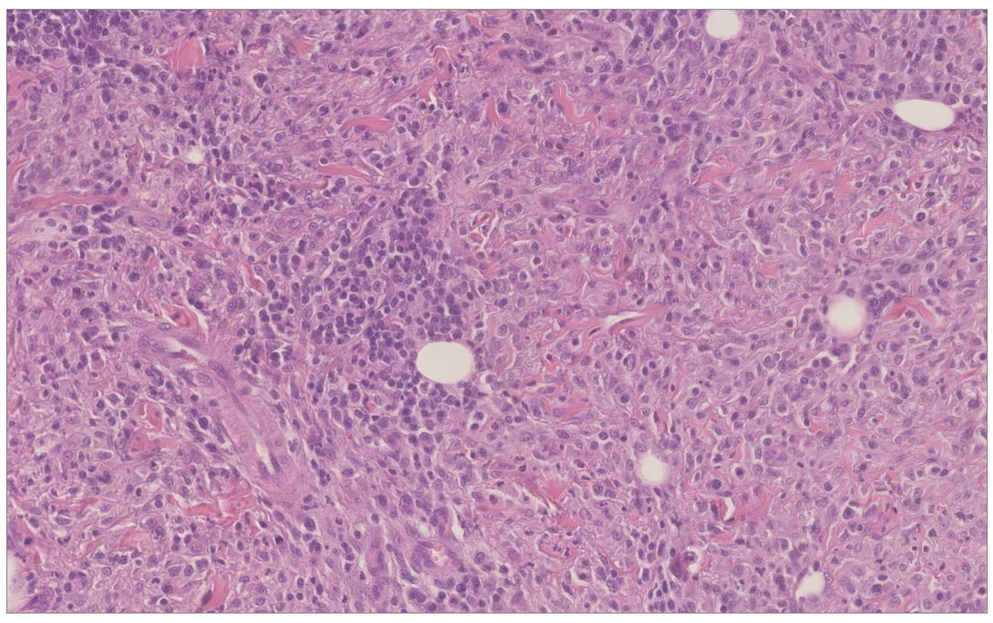


1. Gross lesions. Multiple multifocal-to-coalescing, elevated and crusty nodules, some of them ulcerated, were found scattered in the abdomen. Non delimited, whitish and firm at the section.

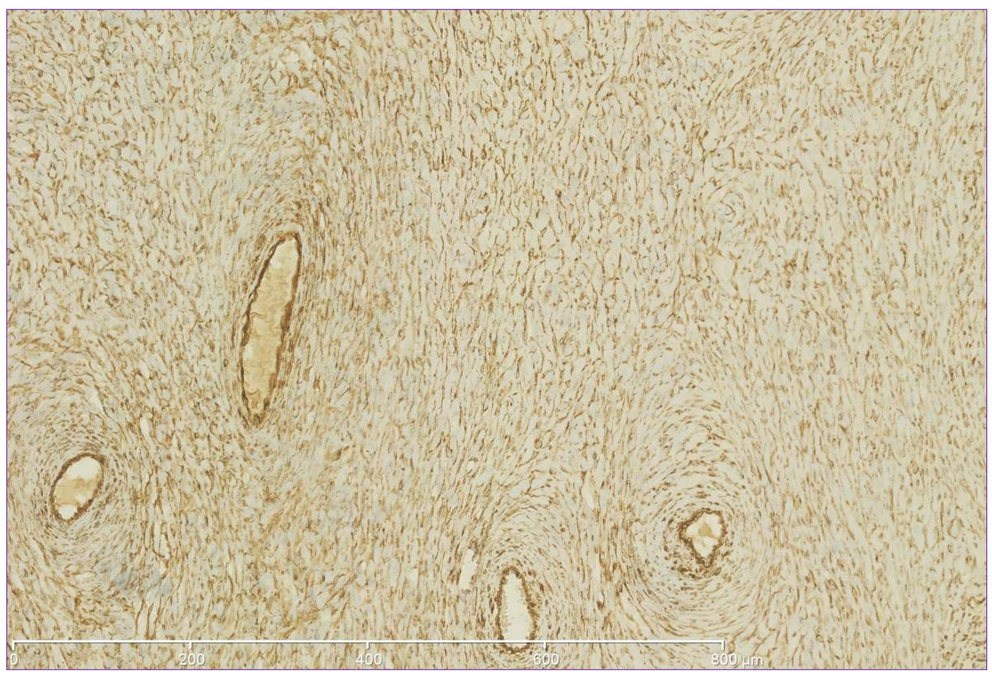
Biopsy samples were taken. The lesions consisted in neoplastic proliferations with fusiform morphology, highly pleomorphic. A diagnosis of multiple undifferentiated sarcomas was made. Some complementary immunohistochemical markers were additionally performed, including **Vimentin (as a marker of cells of mesenchymal origin), Iba1 (as a marker for macrophages), CD1 (as a marker for Langerhan Cells) and CD5 (as a marker for T lymphocytes, but also B lymphocytes).**

The cat showed no improvement and his condition worsened. For humanitarian reasons, the cat was euthanized, and some organs were taken for histopathological examination. Some of the skin lesions were submitted for molecular studies **(Polymerase Chain Reaction)** and additional immunohistochemical tests were also performed **(c-KIT, as a marker for KIT protein expression).**

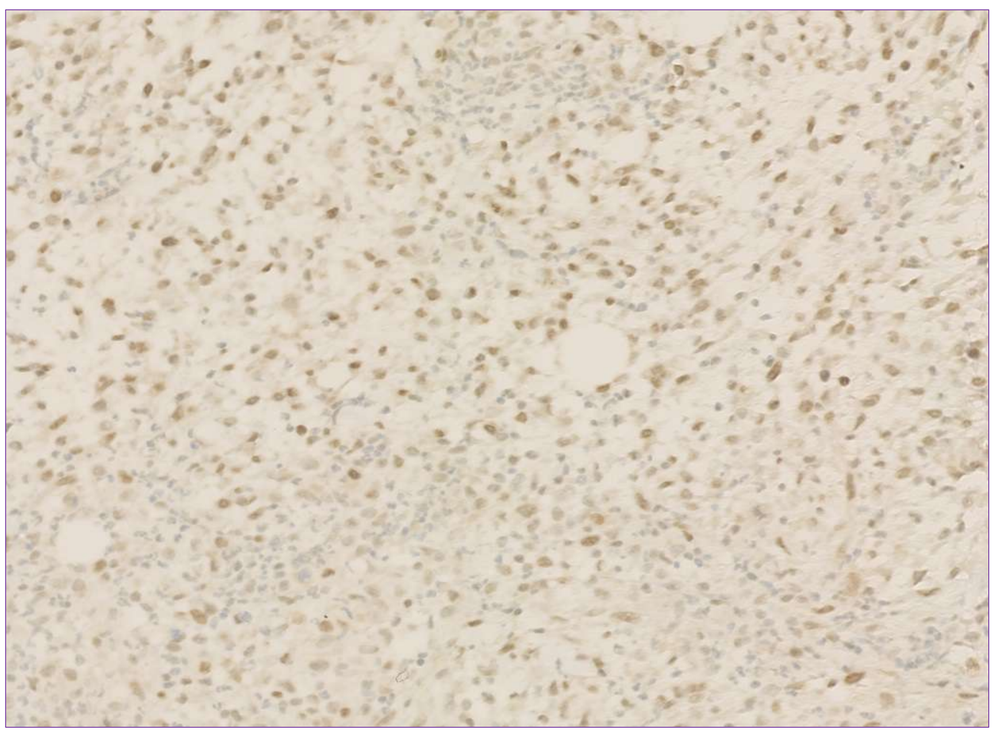
Results



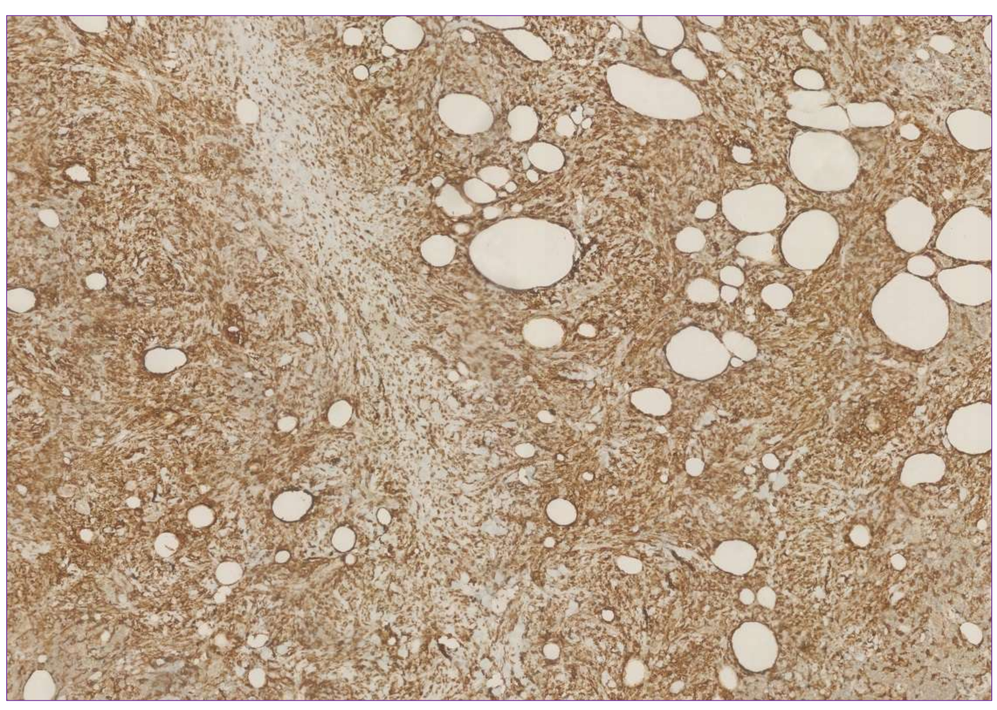
2. HE. An atypical population of fusiform cells is seen. With intense anisokaryosis, anisocytosis, and a mitotic index of 4 mitosis/HPF. Multifocal lymphoplasmacitic aggregates are also seen.



3. Vimentin. Neoplastic cells show strong positivity, confirming its mesenchymal origin.



4. Ckit: neoplastic cells are slightly but diffusely positive. C-KIT is an analogue to v-KIT (oncogene).



5. Iba1. Neoplastic cells show strong positivity, suggesting an histiocytic origin.

Neoplastic cells where both negative for CD1 and CD5.

PCR Sarcomavirus	Number of cycles	DNA copies
POSITIVE	34,53	1,85x10² - 7,39x10²

Conclusions

- There are few cases of FeSV in the bibliography, although it is well known genetically and biologically, histological and immunohistochemical procedures are rarely described.
- In our case, the animal was **FeLV negative** by Snap tests and by PCR, but its presence is essential for recombinant reasons, so more investigation is now being made, including immunohistochemistry and additional PCR. But until now, our case is the first reported negative for FeLV.
- Neoplastic cells were **positive for Vimentin and c-KIT**, not only confirming its sarcomatous nature but also confirming the expression of the viral oncogene v-KIT, which is a cellular homolog of c-KIT, and being a helper in cases of FeSV suspicion.
- **Iba1 expression** suggests an histiocytic origin of the neoplastic cells, so the **classification into fibrosarcoma should be revised**.

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