First *in vivo* pulmonary Carcinosarcoma in a cat

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INTRODUCTION

Carcinosarcoma is a malignant tumour containing both carcinomatous and sarcomatous elements¹. Primary pulmonary carcinosarcoma is rare in humans accounting for less than 1% of thoracic cancers² and is extremely rare in animals³⁻⁴.

Diagnosis is based on morphology and immunohistochemistry, with presence of 2 malignant cell populations⁵.

Surgery provides the most substantial chance at remission and submission for histopathology leads to a complete diagnosis of carcinosarcoma. Surgery is the preferred first line of treatment for human patients with non-metastatic disease¹.

There are still many questions to be answered about the pathogenesis, behaviour and the prognosis of this uncommon neoplasm, rarely reported in Veterinary Medicine.

OBJECTIVE

To report the first case of an *in vivo* pulmonary carcinosarcoma diagnosed in a cat and provide data that may be of value for treatment decisions of pulmonary carcinosarcoma and subsequent prognosis in cats.

CASE DESCRIPTION

A male neutered domestic shorthair cat, 20-year-old, BSC 4/9 was referred for investigation of a non-productive cough and chronic weight loss

CLINICAL EXAMINATION

Unspecific

Thoracic radiography

Rounded, soft tissue opacity of right-sided pulmonary caudal lobe

CT-scan**

Section thickness 0.65 - 1.5 mm

Cavitary, 4.5x5.5x3 cm soft-tissue mass on the right caudal lung lobe

No tracheobronchial lymph node enlargement

No intrapulmonary metastasis

Staging

T1N0M0

Mild symptoms

No thoracic effusion

Surgery

Right caudal lobectomy

Tracheobronchial lymph nodes
Cytology : no neoplastic cells

Outcome

Unremarkable recovery
Discharge

No clinical signs
No evidence of metastasis on thoracic xray

Disease Recurrence :
Xray showed a lung mass of 4cm
The cat was euthanised.
Necropsy declined by the owners

REFERENCES

1. Ersek et al. 2019
2. Travis et al. 2015
3. Salas et al. 2002
4. Ghisleni et al. 2003
5. Sapiezynski et al. 2018
6. Maritato et al. 2014

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** CT : Toshiba Aquillon 64 slices

RESULTS

Bacteriology: Negative after 72 hours

Histopathology : Processed routinely, and stained with haematoxylin and eosin (HE)

Fig. 3 : H&E x 40. The black arrow show the epithelial cell component with its squamous cell shape. The black arrow head identify the mesenchymal component with bone trabeculae.

Carcinosarcoma suspected based on the identification of 2 different cell populations

Immunohistochemistry: Vimentine and Cytokeratin

Fig. 4: AE1/AE3 - Sarcomatous component positive epithelial cells can be seen within the stromal component of the tumour

Fig. 5 : On H&E some portion of the sarcomatous part adopted a more epithelioid aspect but remained positive with Vimentin

Definitive Diagnosis

Immunohistochemistry confirmed the presence of 2 distinct tumour components: an epithelial population, mainly of papillary architecture and a foci of squamous metaplasia, positive to cytokeratin and a sarcomatous population that appeared mainly as spindle cells with crisscrossing fascia formation, positive to vimentin.

DISCUSSION

Carcinosarcomas have been rarely reported in Veterinary, with only 2 cases of pulmonary carcinosarcoma diagnosed at *post mortem* examination, in veterinary literature³⁻⁴.

This is the first report *in vivo* of a successful treatment of pulmonary carcinosarcoma with a overall survival time (OS) of 12 months.

The sporadic cases of feline carcinosarcoma diagnosed in another anatomic locations, revealed a poor outcome, with high rate of metastases documented at the moment of diagnosis or shortly after⁵.

Based on human literature, (OS for surgery alone: 20 months > combined surgery and radiation: OS 7 months > radiation alone: OS 4 months)⁴ surgical resection was the only treatment that this cat underwent.

The 12 month survival time is within the previous data reported by Maritato *et al.* in cats with pulmonary neoplasms staged T1N0M0.

We believe that a localised tumour, with mild symptoms and no malignant thoracic effusion could explain the acceptable outcome and are the most contributive factors to OS, instead of the aggressive nature of this cancer.

STATEMENT

Although feline Carcinosarcoma is rare, it should be considered a differential diagnosis of primary lung neoplasias. Surgical treatment could lead to acceptable outcome if negative staging is observed in CT examination.