Bronchogenic Adenocarcinoma with Unusual Metastasis in Cat

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ABSTRACT

Background: Primary lung tumors in the cats are rare and pulmonary metastatic cancer is more common. Primary lung neoplasms are highly aggressive and tend to metastasize particularly to the regional lymph nodes, pleura, mediastinum bones, muscles, heart, brain and spleen. Digital is the most common metastatic site of primary lung tumors in cats. However, cutaneous metastases of internal tumors are rare in cats. This case reported an unusual cutaneous metastasis in a cat with bronchogenic adenocarcinoma.

Case: A 6-year-old, spayed, female, persian cat was presented for vomiting and anorexia. On physical examination, dyspnea was observed and respiratory sounds were decreased in the caudal portion of the right side of the chest on thoracic auscultation. A nodular lesion was found in the skin extending into the subcutaneous tissue of the chest on fifth thoracic vertebra. On lateral and ventrodorsal radiographs of the thorax, a diffuse interstitial pattern involving the medial and right-caudal lung lobes was noted. Hematological and biochemistry analysis were normal. Antigen and antibody tests for feline leukemia virus (FeLV) and feline immunodeficiency virus (FIV) were negative. Pulmonary edema was suspected, but respiratory efforts became worse despite medication. Due to the progressive severity of clinical signs, refractory to medication, an exploratory intercostal thoracotomy was indicated. Surgical findings included pulmonary congestion, numerous small white nodules with an average diameter of 1-2 mm, disseminated in the pulmonary parenchyma and a larger nodule (1.5 cm) in the right medial lung lobe. Samples from subcutaneous nodule were also collected to histopathology. Histologic evaluation of lung samples indicated a bronchogenic adenocarcinoma with metastasis to the skin. Based on severity of clinical signs and diagnosis of a bronchial adenocarcinoma, the owners elected for euthanasia.

Discussion: The median age in cats with primary lung tumors is approximately 12 years and sex and breed predisposition have not been reported. The cat was a Persian and was younger than other reports. Cutaneous metastasis of primary lung tumors in cats is rare. One report describes painful erythematous papules and pustules in a cat with pulmonary adenocarcinoma. Skin’s histopathological examination confirmed cutaneous metastasis. The metastasis clinically resembled primary dermatitis. Two other reports observed a firm mass attached to muscles with final diagnosis of cutaneous metastasis of pulmonary carcinoma. In this report, a nonpainful, and freely moveable nodular lesion was found in the skin extending into the subcutaneous tissue of the chest. The clinical presentation is uncommon in cats with cutaneous metastasis of bronchogenic carcinoma. Radiographically, the appearance of primary lung tumors in cats tends to be variable, including presence of a solitary mass, multiple masses, consolidated lung lobes, nodular interstitial pattern, pleural effusion, or even a normal appearance. In this cat, radiographs revealed a diffuse interstitial pattern involving the medial and right-caudal lung lobes. Exploratory thoracotomy was very important for definitive diagnosis. The presence of dilated cardiomyopathy, the patient’s age and radiographic findings did not lead to the first suspicion of pulmonary tumor. Subcutaneous nodule was not thought to be connected to pulmonary condition. Cats with firm soft tissue masses should have metastatic pulmonary neoplasia added to the list of differential diagnoses.

Keywords: cat, bronchogenic adenocarcinoma, dyspnea, cutaneous metastasis.

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INTRODUCTION

Primary lung tumors in cats are rare and pulmonary metastatic cancer is more common [1,7]. Primary lung neoplasms are highly aggressive and tend to metastasize particularly to the regional lymph nodes, pleura, mediastinum bones, muscles, heart, brain and spleen [2,9]. Metastasis to the digits is common in cats [6,9]. However, cutaneous metastases of internal tumors are rare in cats [13], differently from humans [8], who frequently have skin metastasis of lung carcinoma in 66% of cases [8].

Primary lung tumors are more common in geriatric animals and clinical signs on presentation depend on the extent of the pulmonary involvement, the presence of metastasis, and association with paraneoplastic syndromes [1,9]. On radiographic examination, the appearance tends to be variable [1,3,5,10,11]. The prognosis is considered unfavorable because of the advanced stage of the disease at time of diagnosis and the aggressive metastatic behavior of the tumor [9].

This case reported an unusual cutaneous metastasis in a cat with bronchogenic adenocarcinoma.

CASE

A 6-year-old, spayed, female, persian cat was presented for vomiting and anorexia. She was receiving treatment for foliaceus pemphigus and dilated cardiomyopathy. On physical examination, dyspnea was observed and respiratory sounds were decreased in the caudal portion of the right side of the chest on thoracic auscultation. A nodular lesion was found in the skin extending into the subcutaneous tissue of the chest on fifth thoracic vertebra (Figure 1). The nodule was three centimeters in diameter, firm, nonpainful, and freely moveable in the skin. Digets were normal.

On lateral and ventrodorsal radiographs of the thorax, a diffuse interstitial pattern involving the medial and right-caudal lung lobes was noted (Figure 2). Hematological and biochemistry analysis were normal. Antigen and antibody tests for feline leukemia virus (FeLV) and feline immunodeficiency virus (FIV) were negative.

A pulmonary edema was suspected. Furosemide (Furosen®) 2 mg/kg subcutaneous three times a day, aminophylline (Aminofilina Sandoz®) 6 mg/kg intramuscularly twice a day, clindamycin (Clindabiotic®) 10 mg/kg intravenous once a day and oxygen supplementation were administered for three days. However, there was no improvement in radiographic pattern. Due of the progressive severity of clinical signs, refractory to medication, an exploratory intercostal thoracotomy was indicated.

Surgical findings included pulmonary congestion, numerous small white nodules with an average diameter of 1-2 mm, disseminated in the pulmonary parenchyma and a larger nodule (1.5 cm) in the right medial lung lobe (Figure 3). Pulmonary tissue and subcutaneous nodule were collected to histopathological examination.

Postoperatively, she was maintained on oxygen supplementation fentanyl patch (Durogesic®), meloxicam (Maxican 0.2%®) 0.1 mg/kg once a day and clindamycin. Three days after surgery, the histopathological examination revealed a bronchogenic adenocarcinoma with metastasis to the skin. Based on severity of clinical signs and diagnosis of a bronchial adenocarcinoma, the owners elected for euthanasia.

DISCUSSION

The median age in cats with primary lung tumors is approximately 12 years and sex and breed predisposition have not been reported [3,5,7,10,12]. The cat was a Persian and was younger than other reports [5,9].

Cutaneous metastasis of primary lung tumors in cats is rare. One report describes painful erythematous papules and pustules in a cat with pulmonary adenocarcinoma. The metastasis clinically resembled primary dermatitis, but histopathology confirmed cutaneous metastasis. [5]. Two other reports observed a firm mass attached to muscles, with final diagnosis of cutaneous metastasis of pulmonary carcinoma [7,11]. In this report, a nonpainful, and freely moveable nodular lesion was found in the skin extending into the subcutaneous tissue of the chest. This clinical presentation is unusual in cats with metastatic primary lung tumor.
Radiographically, the appearance of primary lung tumors in cats tends to be variable, including a solitary mass, multiple masses, consolidated lung lobes, nodular interstitial pattern, pleural effusion, or even a normal appearance [1,3-5,10-12]. In this cat, radiographic examination revealed a diffuse interstitial pattern involving the medial and right-caudal lung lobes. This pattern could be confused with pulmonary edema.

Exploratory thoracotomy was very important for definitive diagnosis. The presence of dilated cardiomyopathy, the patient’s age and radiographic findings did not lead to the first suspicion of pulmonary tumor. The subcutaneous nodule was not thought to be connected to pulmonary condition. Cats with firm soft tissue masses should have metastatic pulmonary neoplasia added to the list of differential diagnoses. This report is an unusual cutaneous metastasis of bronchogenic adenocarcinoma in a cat.

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REFERENCES


