What's your diagnosis?

Jessa Francisco

Lucy the 2 year old Boxer

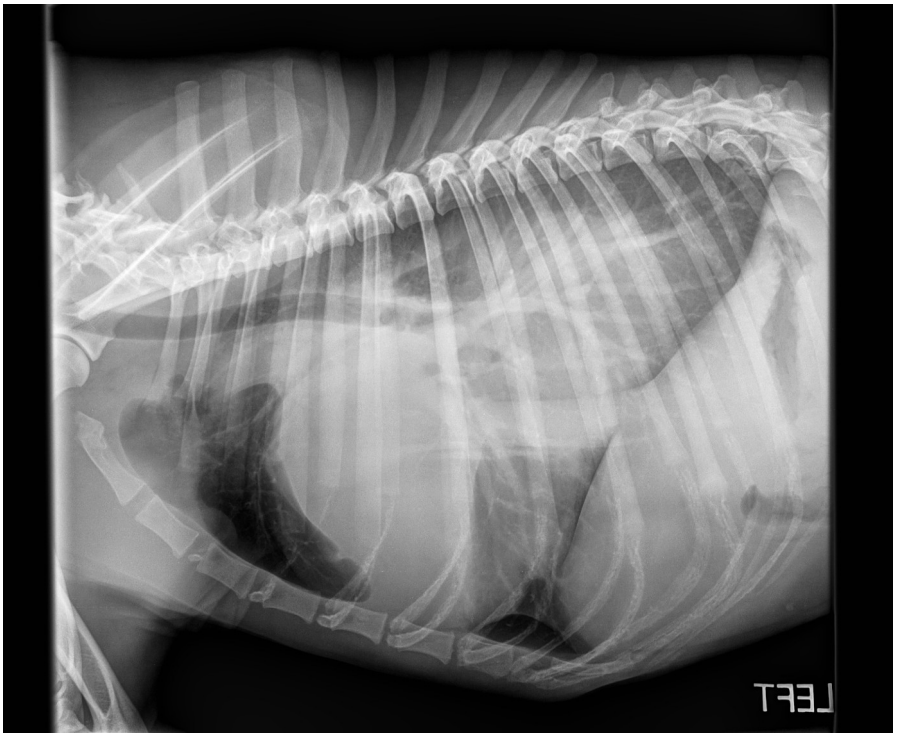
History

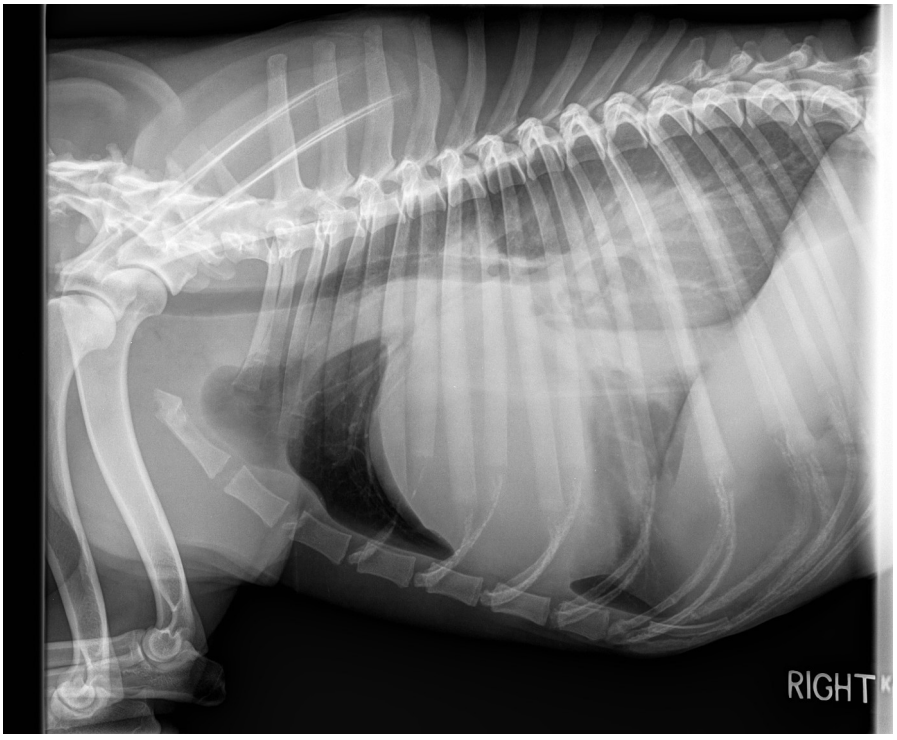
- Lucy presented to a referring DVM on 03/23/10 with history of weight loss, anorexia and lethargy.
- CBC/Chemistry, 4Dx SNAP test, thoracic radiographs, and thoracocentesis were performed. No notable abnormalities on the CBC/Chemistry. The 4Dx SNAP (an in-house ELISA test for *Anaplasma phagoctyophilum, Erlichia canis, Borreila burgdorferi, and Dirofilaria immitis*) test was negative. A soft tissue opacity was noted in the area of the left crus of the diaphragm on thoracic radiographs. A dark bloody fluid was removed from the left hemi thorax that contained red blood cells and degenerate neutrophils.
- Lucy was referred to KSU-VMTH on 03/31/10 for lung lobe torsion, pulmonary trauma/neoplasia and/or repair of a suspected diaphragmatic hernia.

Physical exam

- Heart rate: 120 beats per minute, Temperature: 104˚ F, Respiratory rate: panting
- Lucy was dyspnic on presentation
- PCV and total protein: 41% and 5.5 mg/dL

Diagnostics:

- Thoracic radiographs:
  - 

  - 

- Description: There is large soft tissue opacity in the entire left hemi thorax causing cranial and lateral deviation of the right lung lobes and the heart. There is border effacement of the left and caudal borders of the heart. The soft tissue opacity is also causing border effacement of the left border of the diaphragm. There is dorsolateral deviation of the trachea and the main stem bronchi. The caudal vena cava appears enlarged and tortuous; the borders of the aorta are ill-defined. On the limited view of the abdomen the cranial abdominal structures appear within normal limits and properly oriented within the abdominal cavity. There is general decrease of serosal detail.
- Impressions: There is a large soft tissue opacity in the left hemi thorax causing a mediastinal shift to the right and possibly compressing the caudal vena cava. The opacity may be of pleural or pulmonary origin and differentials include; abscess, granuloma, neoplasia, hematoma, or a cyst. The decreased abdominal serosal detail is likely due to decreased intra-abdominal fat but abdominal effusion cannot be ruled out at this time.

- Thoracic ultrasound:
- 

  - Description: A large fluid-filled, multi-septated structure was observed in the left hemi thorax. The mass appeared to be causing compression of the left lungs and a right mediastinal shift. In the limited view of the abdomen the liver, stomach, spleen and kidneys appeared within normal limits. The caudal vena cava appeared enlarged. Small amounts of abdominal effusion and pleural effusion could be seen on corresponding sides of the diaphragm.
  - Impressions: Differentials for the fluid filled mass include; abscess, chronic inflammation, hematoma, granuloma or neoplasia.
- Thoracocentesis: Fluid, 13 mLs, was removed from one of the compartments of the mass with ultrasound guidance. The fluid was dark red in color and cloudy. The hematocrit of the fluid was less than 3% and the total nucleated cell count 35.4 K/uL. Nucleated cells, red blood cells and abundant amounts of cellular debris were observed on cytology. The nucleated cell population consisted of moderately to severely degenerate neutrophils and monocytes. The pleural fluid was determined to be a neutrophilic exudate, aspiration of a necrotic area and infection cannot be ruled out. Culture and sensitivity were recommended.

Treatment

- Lucy was placed on LRS fluids at a rate of 75 mls/kg/day and observed overnight.
- Lucy was taken to surgery on 04/01/10.
- A median sternotomy was performed.
- A large, dark, compartmentalized, fluid filled mass was observed in the left hemi thorax. No discernable lung tissue was found in the left hemi thorax. The right lung appeared intact and

functional with a few atalectic areas. The heart was surrounded by a thick, dark capsule and pericardial effusion was present. 1.5 to 2 L of fluid was suctioned from the mass and the mass was removed. The thorax was copiously lavaged. The sternum was closed and bilateral chest tubes were placed.

- The mass was sent for histopathological analysis and the pleural fluid was sent for culture and sensitivity.
- During surgery, Lucy's oxygen saturation dropped to 42%, her recovery was slow but progressive.
- Lucy is on bilateral nasal insufflation and her oxygen saturation is between 98-100%.
- Lucy is being treated with fentanyl (an opiod for pain control), enrofloxacin and amoxicillin (antibiotics).

Follow-up:

- Histopathology of the mass revealed a mesothelioma with portions of atalectic and collapsed lung tissue. Metastatic disease was found in the sternal lymph nodes. Chronic suppurative pleuritis was also present. There has been no growth on the bacterial culture on the pleural fluid.
    - Mesothelioma is a neoplasia associated with the epithelial cells that line body cavities, such as the pleural, pericardial or peritoneal cavity. . Reactive mesothelial cells, in response to inflammation or infection, can have a similar appearance to neoplastic cells and distinction can often be difficult. In humans, this has been linked to long-tern asbestos exposure. There has been no cause linked to mesotheliomas in dogs, asbestos and other chemical exposures have been suggested but not proven. These neoplasms are malignant; they infiltrate local tissue, exfoliate neoplastic cells and can seed throughout the body cavity. They are often associated with neoplastic effusion. They are highly locally infiltrative, and local lymph node infiltration can occur but distant metastasis is rare.
    - Mesothelioma is a rare cancer in dogs. It is more often seen in older animals but confirmed cases have been reported in animals as young as 7 months of age.
    - Treatment of mesotheliomas is often unrewarding. If large tumors are present, surgical debulking is recommended to decrease the amount of disease present. Chemotherapy is recommended because of the infiltrative nature of the disease. Intracavitary cisplatin is the treatment of choice, but limited to no more than two treatments because of complications. Intravenous doxirubin or mitoxantrone therapies have been shown to be effective. Often effusion continues to accumulate and cause complications. Dogs usually die from complications associated with the disease. *

- Due to the severity of the disease and financial constraints, Lucy's owner's decided not to persue chemotherapy and wanted to spend time with Lucy. Lucy's chest tubes were removed, but she continued to deteriorate in the ICU ward. Her owner's opted for humane euthanasia.

*References for information on canine mesothelioma.

Echandi RL, F. Morandi, S.J Newman, A. Holford. *Imaging Diagnosis- Canine Thoracic Mesothelioma.* Veterinary Radiology and Ultrasound. Vol. 48. Nov 3, 2007, pp 243-245.

Themerckvetmanual.com