What's Your Diagnosis?

Mary Davis – Class of 2018

Signalment: 13 y MC DSH

Presenting complaint: CKD with renal abnormalities on radiographs

History: Patient has a history of renal disease that is suspected to have started with an acute crisis 2 years ago (2015). In October 2016 he had a creatinine of 2.5 mg/dL and early May 2017 his creatinine was 5.5 mg/dL. His diet is Hill's k/d and he is eating well. He receives 200 mL LRS SQ every other day and takes Azodyl. Spring visited the rDVM for a recheck in late May and his creatinine was 6.1 mg/dL and his sodium was 171 mmol/L. Radiographs showed a normal right kidney, smaller left kidney, and a distended urinary bladder. A heart murmur was heard on auscultation by rDVM the same day. He was referred to KSU-VHC.

PE Findings: Patient was bright, alert, and responsive upon presentation to KSU-VHC. He was in good body condition but his hair coat was dry and brittle. He did not appear dehydrated. Lung auscultation was normal, but there was a grade 3-4/6 systolic heart murmur with a normal rhythm. Abdominal palpation was unremarkable.

Diagnostic Plan:

- CBC
    - Mild non-regenerative anemia
- Chemistry
    - BUN 44
    - Creatinine 4.9
    - Phosphorus 5.3
    - Potassium 3.4
- Urinalysis
    - USG after fluids: 1.008, 2+ protein, inactive sediment
- UPC: 2.3
- Echocardiogram: thickened ventricles and a very dilated left atrium. These changes are consistent with hypertrophic cardiomyopathy.
- Renal profile: BUN 52, creatinine 5.0, phosphorus 3.5, potassium 3.7
- Thoracic radiographs

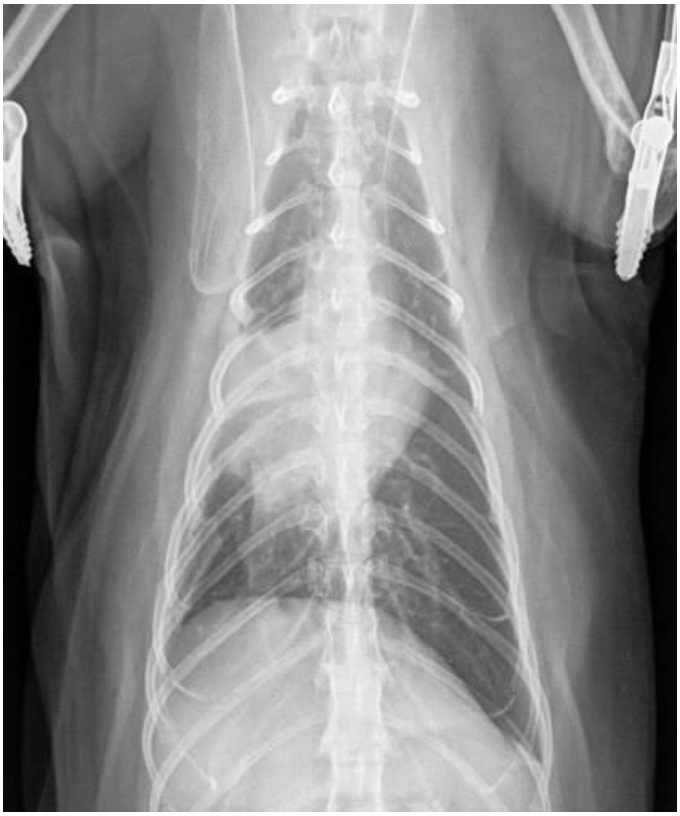


Figure 1: VD thoracic radiograph

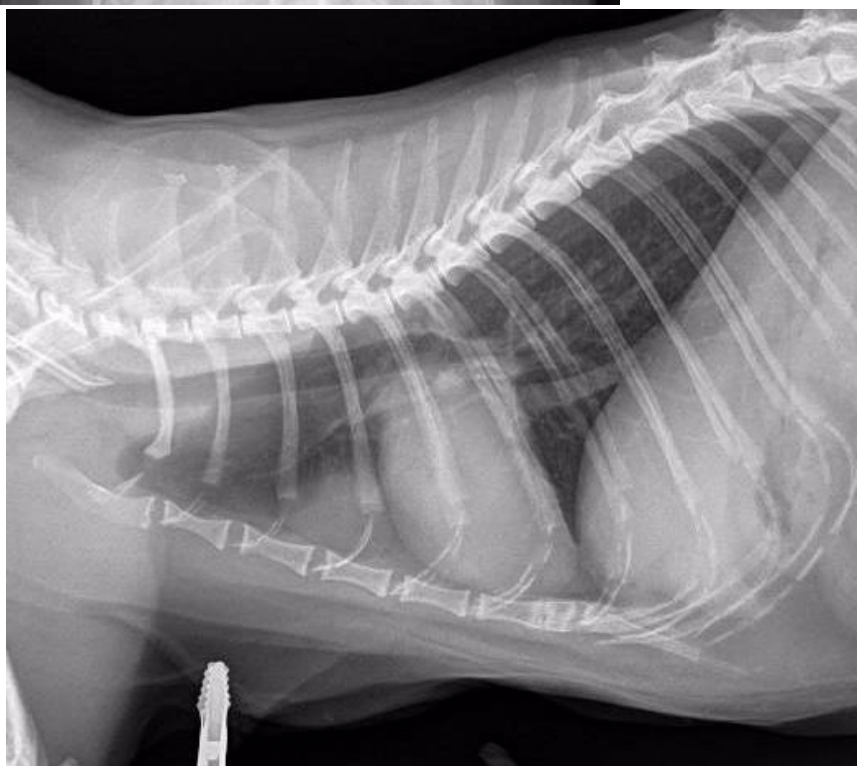


Figure 2: Right lateral thoracic radiograph

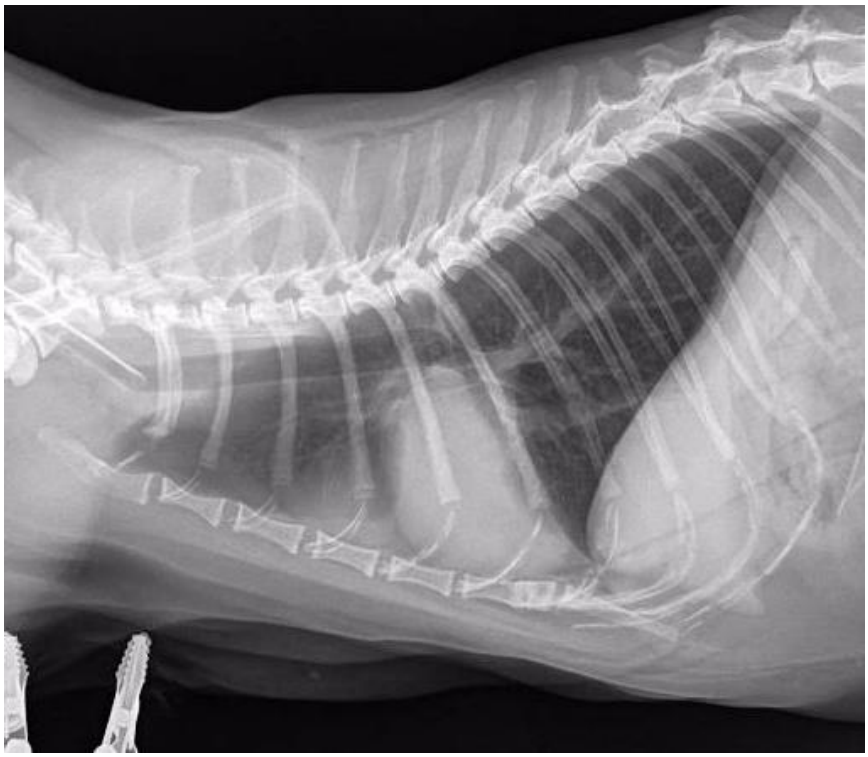
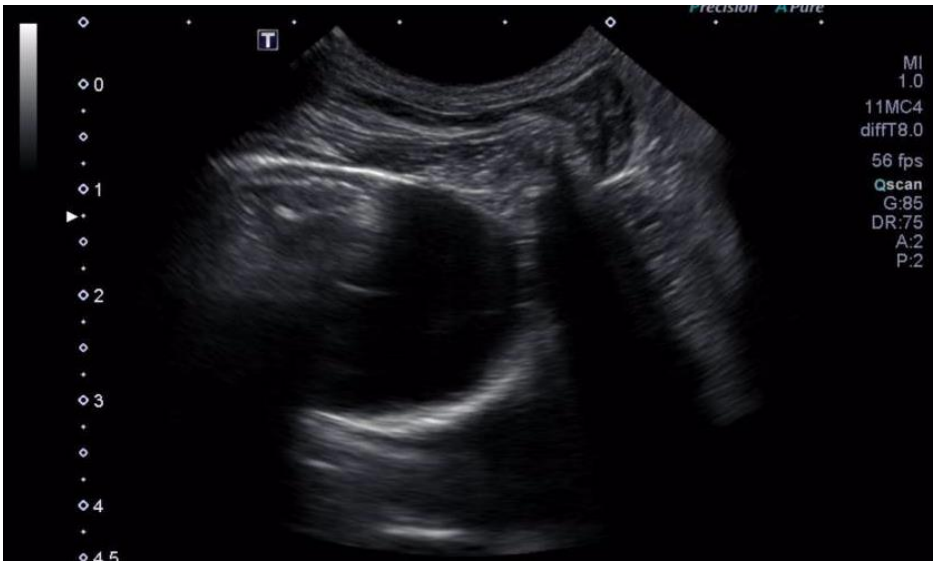


Figure 3: Left lateral thoracic radiograph

- Radiographic Findings:
  - Dorsal deviation of the trachea
  - Dorsal displacement of the carina
  - Enlargement of the cardiac silhouette with a VHS of 8.2.
  - Single, well-marginated, round soft tissue opacity dorsal to the 3rd and 4th sternebrae. It is approximately the length of T3-T5 and 3x the height of T4.
  - Right mediastinal shift
  - Endotracheal tube terminating at the level of cranial T1
  - All other vasculature and structures are within normal limits.
- Radiographic Impressions:
  - Cardiomegaly with differentials of cardiomyopathy (such as hypertrophic cardiomyopathy) and valvular disease.
  - Cranial mediastinal mass with differentials of a branchial cyst and less likely mediastinal mass of thymic origin which could be neoplastic or reactive lymphadenopathy.



- Thoracic Ultrasound
    - Thorax
        - Cranial to the heart there was a 2.4 cm cystic structure with a thin capsule just cranial to the heart.
        - Thickening of left ventricular and septal walls.
        - Left atrium measured 16.8 mm diameter at the height of the closed aortic valve
    - Impressions:
        - Cystic lesion within the cranial mediastinum. Differentials of branchial, parathyroid, thyroglossal duct, and pleural origins.
        - Left ventricular hypertrophy and left atrial dilatation with differentials of hyperthyroidism, hypertrophic cardiomyopathy, or systemic hypertension.

Discussion

There are several potential diagnoses for cranial mediastinal cysts in cats. Histologic evaluation is required to determine the type of cyst that is present. These cysts originate from branchial arches, parathyroid, thyroglossal duct, and pleural tissues. Cystic lesions can have varying clinical signs, but most often they are incidental findings. Cysts tend to be well defined and seen on multiple radiographic views and they can get so large as to cause caudal displacement of the cardiac silhouette. Upon aspiration a clear, colorless fluid can be seen. It can be acellular or mildly cellular with neutrophils, erythrocytes, platelets, small lymphocytes, and macrophages in small numbers. Upon ultrasound, cysts are round and anechoic is appearance. When cysts are drained, they can recur or remain empty, but what determines the rate of recurrence is currently unknown at this time (Zekas and Adams 2002).

Branchial cysts are caused by remnants of the embryonic branchial arches. These cysts contain a pseudostratified, columnar secretory epithelium that creates and maintains the fluid within the cyst (Joffe 1990). These cysts are most often derived from the second branchial cleft, but have been seen as remnants of the pharyngobranchial duct or the cervical vesicle. Although these cysts are congenital they are not usually discovered until later in life. They may become enlarged due to continuous accumulation of fluids or a rapid increase in size. These cysts are unilateral and are not inherited (Joffe 1990).

There are 4 different classifications of branchial cysts. First branchial cleft type I and II are located by the external auditory canal. The second branchial cleft is located on the cranial border of the

sternocleidomastoid muscle. The third/fourth branchial left is in close proximity to the thyroid gland. They can also be found in the cranial mediastinum, associated with the thymus. Depending on the location, the clinical signs can vary. Those that occur on the face can appear similar to a salivary mucocele with swelling of the face. However, those that are present in the cranial mediastinum do not cause any clinical signs and are discovered due to other issues indicating thoracic radiographs. The only definitive treatment is to surgically remove the cystic lesion (Roux and Kuehn 2013).

References

Joffe, Daniel J. 1990. "Brancial cyst in a cat." *Can Vet J* 525-526.

Roux, P., and N. Kuehn. 2013. "Branchial cyst in a dog ." *Gesellschaft Schweizer Tierärztinnen und Tierärzte* 511-514.

Zekas, Lisa J., and William M. Adams. 2002. "Cranial Mediastinal Cysts in Nine Cats." *Veterinary Radiology and Ultrasound* 43 (5): 413-418.