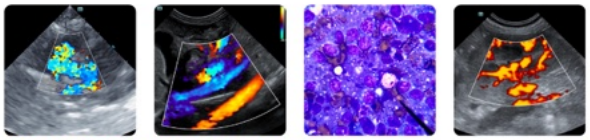


PATIENT

Jack Breyer

SPECIES

Canine

BREED

Beagle

SEX

Neutered male

AGE

12 years

WEIGHT

21 lbs

INTERPRETED BY

Bradley Harris, DVM, DACVECC, DACVIM (cardiology)

IMAGING PERFORMED BY

Dr. Christensen

HOSPITAL NAME

Tranquility VC

REFERRING VET

Dr. Christensen

INVOICE

69621

DATE

12/29/25

PRESENTING CLINICAL SIGNS

History: Recheck ultrasound from 2/4/2025. Splenic micronodular hyperplasia pattern, liver nodule, moderate gallbladder debris, hyperechoic pancreas, age related kidney changes and a large number of suspect small urinary bladder cystoliths seen on previous abdominal ultrasound. Previous cardiac ultrasound showed chronic degenerative valve disease causing moderate mitral and mild tricuspid regurgitation.
Abnormal PE/Chem/CBC/UA Results: Currently on Pimobendan 2.5 mg q 12h. Previous BW showed alk-phos elevation. Grade 3/6 systolic murmur. Evidence of mild OA.

ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN

Urinary System

The urinary bladder is adequately distended with anechoic urine and contains a large amount of small, hyperechoic hard shadowing uroliths. The urinary bladder wall is moderately thickened, with slightly irregular mucosal changes and a minimal amount of suspended debris. The trigone and proximal urethra appear patent and there is no evidence of lower urinary tract obstruction.

The kidneys are normal in size and structure, with appropriate corticomedullary definition. The cortices are hyperechoic with a decreased corticomedullary junction definition. The cortex to medulla ratio appears appropriate and there are numerous cortical cystic changes noted bilaterally. There is mild to moderate dystrophic mineralization noted with no significant pyelectasia or pelvic dilation and no evidence of obstructive disease. The capsules are mildly irregular bilaterally. The left kidney measured 5.25 cm. The right kidney measured 5.89 cm.

Adrenal Glands

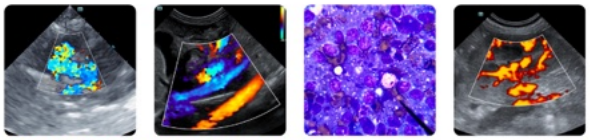
Both adrenal glands are visualized and have normal shape, size, position and echogenicity for this breed. The phrenic vasculature, glandular echogenicity and detail were unremarkable. Capsule, cortex, and medullary definition were normal for this age patient. The left adrenal gland measured 0.57 x 2.03 cm. The right adrenal gland measured 0.48 cm x 2.69 cm.

Spleen

The spleen is smooth with mildly heterogenous parenchyma with a mottled reticular pattern. The capsule is smooth with no evidence of irregularity. The splenic vasculature is normal without signs of congestion, spontaneous echo contrast, or thrombosis. The spleen measures 1.29 cm at the hilus.

Liver

The liver is subjectively normal in size and contour. The parenchyma is appropriately hypoechoic to the spleen with a mildly coarse and homogenous echotexture. In the mid dorsal liver there is a hyperechoic and heterogenous mass effect that is unchanged from previous evaluation. Vasculature is within normal limits with no evidence of congestion. The gallbladder is moderately distended with echogenic debris



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and dependent sediment. The wall is appropriately thin with no evidence of intra- or extra-hepatic biliary dilation. The cystic and common bile ducts were normal. No hepatic lymphadenopathy is documented. There is no overt structural evidence of inflammatory, infiltrative or regenerative pathology evident.

Gastrointestinal

The stomach and intestines are free of stasis and peristaltic activity, with no significant dilation noted. There is normal wall thickness and acceptable curvilinear mural detail. The pyloric-duodenal junction and ileocecocolic junction are patent, and the colon contains normal shadowing feces. There is no evidence of shadowing obstructive material or overt infiltrative disease noted. No associated abnormal lymphatic activity is documented.

Pancreas

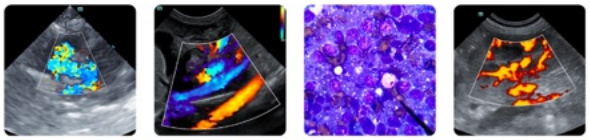
The base and limbs of the pancreas are isoechoic to surrounding omental fat. The pancreatic duct and capsular contour are normal. There is no overt evidence of active inflammatory or neoplastic disease.

Free Abdomen

There is no evidence of abdominal lymphadenopathy. No free fluid was noted. There are no overt mass effects noted.

ULTRASONOGRAPHIC EXAMINATION OF THE HEART

The left atrium is severely enlarged. The left ventricle is normal in dimension, with normal systolic function. The right atrium and ventricle are subjectively normal in dimension and systolic function. The mitral valve is thickened and redundant consistent with myxomatous changes, and there is moderate prolapse. There is evidence of moderate mitral regurgitation. The tricuspid valve leaflets are thickened and redundant with trivial tricuspid regurgitation and no evidence of pulmonary hypertension. The left ventricular outflow tract demonstrated normal laminar flow and the visible aorta is unremarkable. The right ventricular outflow tract assessment revealed normal laminar flow, and appropriate diameter and distensibility. There is no evidence of semilunar valve insufficiency. There is no visible pericardial, pleural, or free peritoneal fluid noted. The cardiac chambers, pericardial and visible extra-cardiac regions were free of masses, spontaneous echo contrast, or thrombi.



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CANINE CARDIAC PARAMETERS	Body Weight kg	HR BPM	LAD 4 ch Long	RAD 4 ch Long	La/Ao Heart Base	LVIDd	LVIDs
NORMAL PARAMETER		50-100			<1.6		
PATIENT	9.55 kg	100	4.53	1.89	1.59	3.16	1.46
CANINE CARDIAC PARAMETERS	**FS**	**EPSS**	**PV V MAX (m/s)**	**AV V Max (m/sec)**	**MR Vmax**	**TR Vmax**	**RPA distensibility (normal >30%)**
NORMAL PARAMETER	28-40	<0.6	0.7-1.6	0.7-1.7	4.5-5.5	< 2.7	
PATIENT	54	0.2	0.7	1.1	5.0	NM	NM

ULTRASONOGRAPHIC FINDINGS

There are multiple uroliths within the urinary bladder lumen with acoustic shadowing. Depending on the nature of some stones, they may be dissolved with diet change alone. Others require surgical intervention. Many stones require analysis after cystotomy in order to ascertain the composition, as well as identify concurrent bacterial infection that can be undetected on urine culture alone.

There is thickening of the cranioventral and craniodorsal urinary bladder wall with mucosal changes and echogenicity consistent with suspended debris. This is most consistent with chronic cystitis. Technically transitional cell carcinoma cannot be ruled out without histopathology but is not overtly suspected based on this pattern.

There is increased renal cortical echogenicity and thickening with a mildly irregular capsular contour. Multifocal cystic cortical changes are noted. This is secondary cystic formation consistent with degenerative changes and remodeling. There is no evidence of abscessation or suspicion of neoplasia. Dystrophic mineralization was noted and is non-obstructive at this time, with no evidence of pylectasis.

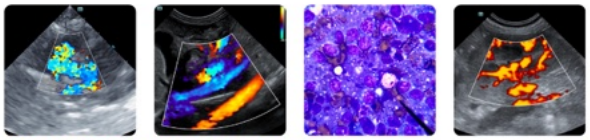
Static heterogenous hepatic mass effect in the mid liver.

The gallbladder contains echogenic, suspended and dependent unorganized debris. This is not yet to the level of an organized mucocele, however early/developing mucocele cannot be ruled out. This dependent sediment is often an incidental finding, or may be associated with concurrent endocrine disease such as hyperadrenocorticism or diabetes mellitus.

These findings are consistent with degenerative/myxomatous mitral valve disease with moderate hemodynamic effects consistent with ACVIM Stage B2.

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

A urinalysis and urine culture via cystocentesis are recommended to evaluate the urinary tract changes for potential urinary tract infection.



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Fine needle aspirates of the spleen and liver with cytology are recommended. A coagulation profile and platelet estimate prior to sampling are indicated to ensure the absence of coagulopathy. Occasionally some tissues are poorly exfoliative, or cytology is non-specific, in which case biopsy with histopathology may be required for a definitive diagnosis.

Repeat abdominal ultrasound is recommended in 3-6 months to monitor hepatic mass and urinary bladder stone formation.

Given the degree of chamber dilation, cardiac therapy with enalapril (0.5 mg/kg BID assuming normotension and lack of renal insult) and Vetmedin (0.25-0.35 mg/kg BID) is recommended. While there is an increased risk of IV fluids, corticosteroids, or anesthesia, there is no overt objection, as the need likely outweighs the risks. If not already performed, baseline thoracic radiographs and blood pressure are recommended. A repeat chest X-rays, BP, and chemistry should be performed again in 1-2 weeks. A repeat echo is indicated in 6 months. Consideration could be given to mitral valve repair (open heart surgery or transcatheter edge to edge repair). Owners should monitor resting respiratory rate at home. Values above 30 breaths/minute or an increase in respiratory rate 10% above baseline should prompt veterinary re-evaluation.

Anesthesia considerations:
While there is no CHF present, there is likely an increased anesthetic risk which must be considered prior to any anesthetic procedure. If anesthesia is necessary, then alpha-2 agonists, ketamine, high dose acepromazine, and Telazol should be avoided. If an ACE inhibitor (enalapril, benazepril) or spironolactone is being given, it should not be administered on the morning of general anesthesia. Other cardiac medications should be administered per the normal dosing schedule. Fluid therapy during anesthesia should be considered at a reduced rate (e.g., 5 ml/kg/hour) if possible. A shorter anesthetic duration will reduce the risk of complications. Pre-oxygenation is advised. Premedication with an opioid (i.e., butorphanol, hydromorphone, oxymorphone) with or without a benzodiazepine is generally the safest protocol. An induction agent such as Propofol, alfaxalone, or diazepam/etomidate can be used to effect. Maintenance of anesthesia with isoflurane or sevoflurane is reasonable. Dobutamine (2.5-10 µg/kg/min as a CRI, starting at 2.5 µg/kg/min and increasing the dosage incrementally) may be used in lieu of fluid boluses to augment systemic blood pressure.

Diet:
A high-quality food from Hills, Royal Canin, Science Diet, Eukanuba, Iams, or Purina that is highly palatable with adequate protein and calories for maintaining an optimal body condition is recommended. Consider omega-3 fatty acid supplementation. Avoid any boutique, exotic, or grain-free diets.

Activity:
Moderate physical activity (meandering walks, exploring the backyard, playing with toys inside, getting excited when family gets home, etc.) is encouraged, but periods of strenuous aerobic activity (jogging, strenuous outdoor ball play, prolonged play at the dog park, etc.) should be avoided, especially during periods of high heat (> 80 F) and humidity. Dogs with heart disease tend to tolerate cool and cold temperatures much better than high temperatures. Avoid sudden increases in activity (e.g. 2 block walks during the week but 2 mile walks followed by 30 minutes at the dog park on the weekends) as this may be difficult for the cardiovascular system to deal with.

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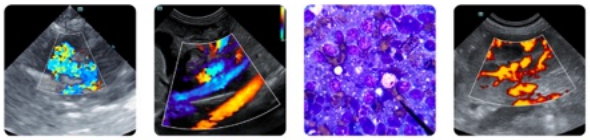

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Educational Teleconsultation Services™

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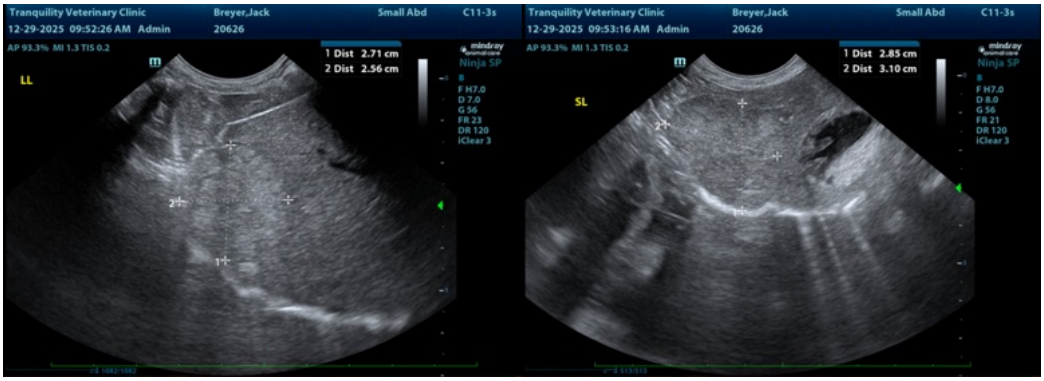

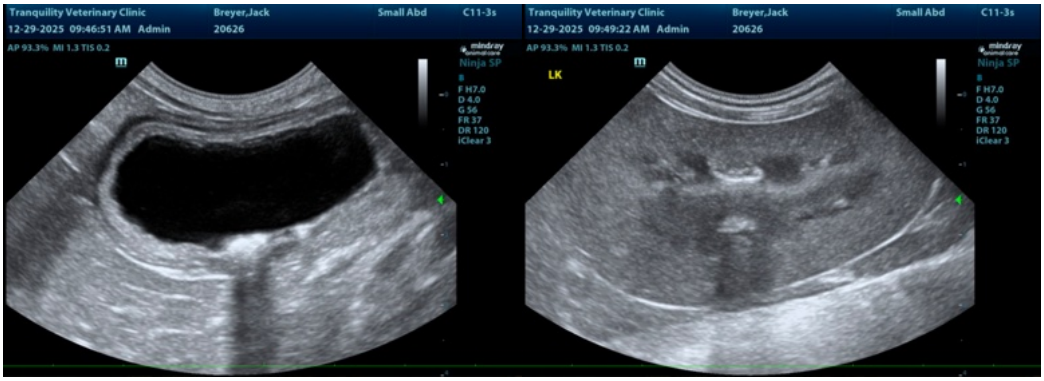

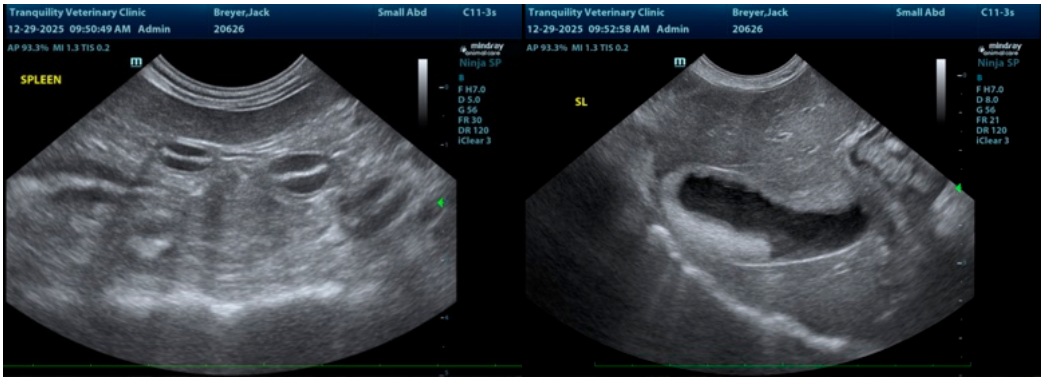

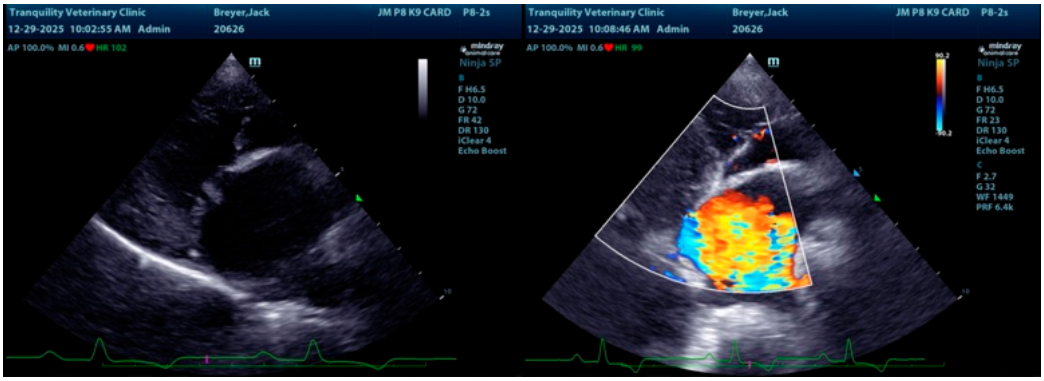

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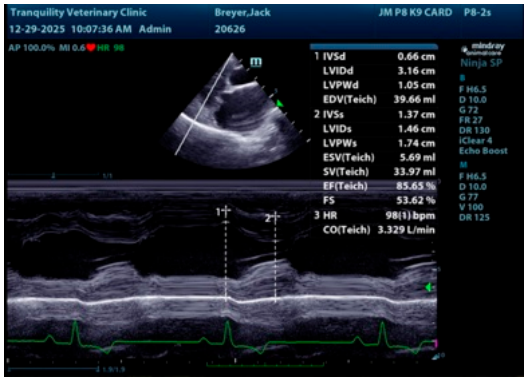

The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

Thank you for this referral. If the clinical or image interpretation does not parallel your findings or if I can be of any further assistance please contact me.

Bradley Harris, DVM, DACVECC, DACVIM (cardiology)

info@SonoPath.com