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VETERINARY CASE SUMMARY

Radiographic and laboratory interpretation based on the provided lateral thoracic/cranial abdominal radiographs and blood chemistry panel from 2024.

Veterinary Case Summary

Field	Information
Patient	DOGGY
Species / Breed	Dog / breed not stated
Sex / Age	Male / 14 years
Date of diagnostics	2024
Prepared as	VCC structured written case summary

Reason for Review

Correlation of radiographic findings with the available clinical chemistry results, with focus on cranial abdominal enlargement/mass effect and marked liver enzyme elevations.

Summary Assessment / Main Findings

No.	Main finding
1	Marked cranial abdominal soft-tissue opacity / mass effect on lateral radiographs.
2	Markedly increased liver enzymes, especially ALP 895 U/L and ALT 394 U/L.
3	Findings together most strongly suggest a significant hepatobiliary, hepatic, or endocrine-associated liver process.
4	Primary renal failure is not the dominant pattern, as creatinine remains within reference range and BUN is only mildly elevated.

Diagnostic Imaging: Radiographic Impression

The radiographs appear to be lateral views of the thorax and cranial abdomen. The image quality is limited by low contrast and noise, so the interpretation should remain cautious and should not replace a formal radiology report.

The most striking feature is a large soft-tissue opacity in the cranial to mid abdomen. This creates the impression of a crowded abdomen and possible caudal displacement of other abdominal structures. On the thorax/cranial abdomen view, the enlarged structure appears to push cranially toward the diaphragm.

Most relevant radiographic considerations

- Marked hepatomegaly, hepatic nodular disease, or hepatic mass effect.
- Splenic or other cranial abdominal mass effect cannot be excluded radiographically.
- Gastric distension is a differential, although the concurrent liver enzyme pattern makes hepatobiliary involvement more suspicious.
- Degenerative spinal changes/spondylosis deformans are visible and are common chronic findings in older dogs.
- No obvious massive pleural effusion or pneumothorax is apparent on the provided screenshots, but these views are not ideal thoracic screening studies.

Laboratory Findings:

The chemistry panel shows a pattern that is more suggestive of liver/biliary/endocrine-associated liver change than primary kidney failure.

Parameter	Result	Reference	Interpretation
Glucose	5.40 mmol/L	3.89-7.95	Within reference interval
Creatinine	102 umol/L	44-159	Within reference interval
BUN / Harnstoff	12.7 mmol/L	2.5-9.6	Mildly increased
Total protein	66 g/L	52-82	Within reference interval
Albumin	31 g/L	22-39	Within reference interval
Globulin	35 g/L	25-45	Within reference interval
A/G ratio	0.9	-	Acceptable
ALT	394 U/L	10-125	Clearly increased
ALP	895 U/L	23-212	Markedly increased

The ALP trend is clinically important: 66 U/L in 2021, 289 U/L in 2022, and 895 U/L in 2024. This supports a progressive process rather than an isolated one-time change. ALT is also clearly elevated, suggesting hepatocellular injury or leakage.

The BUN elevation with normal creatinine does not fit a classic primary renal failure pattern. Possible explanations include mild dehydration, increased protein catabolism, high-protein diet, gastrointestinal bleeding, or a pre-renal component.

Combined Clinical Interpretation

When the cranial abdominal enlargement on radiographs is interpreted together with the marked liver enzyme elevations, the main concern becomes a significant liver, biliary, or endocrine-related liver process.

Leading differential diagnoses

1. Hepatic neoplasia / liver tumor, including primary hepatic tumor, metastatic disease, or a mass arising near the liver.
2. Severe nodular hyperplasia, which is common in older dogs and can be associated with liver enlargement and elevated liver enzymes.
3. Vacuolar hepatopathy / steroid-type hepatopathy, often associated with high ALP and hepatomegaly.
4. Cushing's disease / hyperadrenocorticism, especially with very high ALP and suspected hepatomegaly.
5. Gallbladder or biliary disease, including gallbladder mucocele, cholestasis, bile duct obstruction, inflammation, or biliary tract disease.
6. Medication-induced enzyme elevation, particularly corticosteroids, phenobarbital, certain anticonvulsants, NSAIDs, or other chronic medications.

Recommended Further Diagnostics

Priority recommendation: abdominal ultrasound

Abdominal ultrasound is the most important next diagnostic step. Radiographs show size, position, and mass effect, while ultrasound can assess organ origin and internal architecture.

- Assess liver size, echogenicity, nodules, masses, and vascular pattern.
- Assess gallbladder and bile ducts for mucocele, cholestasis, obstruction, or inflammation.
- Assess spleen, adrenal glands, pancreatic region, stomach, and any visible mass effect.
- Look for free abdominal fluid and determine whether the mass effect is hepatic, gastric, splenic, or another structure.

Additional recommended tests

- Complete blood count.
- Full chemistry extension including bilirubin, GGT, cholesterol, triglycerides, electrolytes, and SDMA.
- Urinalysis with urine specific gravity.
- Coagulation profile before any liver sampling.
- Blood pressure measurement.
- Cushing's screening if clinically compatible: ACTH stimulation or low-dose dexamethasone suppression test.
- Bile acids if hepatic function needs further assessment.
- Ultrasound-guided fine needle aspirate or biopsy only if safe and clinically justified.

Owner-Friendly Summary

What do the most important findings mean?

The X-rays suggest that something in the front part of the abdomen is enlarged or taking up more space than expected. The bloodwork shows clearly increased liver-related values. Taken together, this makes a liver or bile-system problem a major concern.

Is this kidney failure?

The kidney value creatinine is still within the reference range. One kidney-associated value, BUN, is mildly increased, but on its own this does not strongly indicate primary kidney failure. It may also rise with dehydration, diet, digestion-related bleeding, or other causes.

What is the most useful next step?

An **abdominal ultrasound** would be the most useful next test. It can show whether the enlarged area is the liver, gallbladder, stomach, spleen, or another structure, and whether there are nodules, a mass, biliary disease, or other changes.

When should DOGGY be checked urgently?

- Labored breathing, collapse, severe weakness, pale gums, or obvious pain.
- Repeated vomiting, severe abdominal distension, or inability to settle.
- Jaundice/yellow discoloration of the eyes, gums, or skin.
- Black/tarry stool or suspected gastrointestinal bleeding.
- Marked loss of appetite, sudden deterioration, or neurologic signs.

Overall Conclusion

The combined radiographic and laboratory picture points most strongly toward a significant hepatobiliary or endocrine-associated liver process. Given DOGGY's age, the apparent cranial abdominal mass effect, and the progressive rise in liver enzymes, hepatic neoplasia and other structural liver/biliary disorders should be actively ruled out.

This written interpretation is based only on the provided images and laboratory report and should be used as a structured discussion aid with the attending veterinarian. It does not replace a full clinical examination, formal radiology report, ultrasound examination, or direct veterinary diagnosis.

WHAT COULD IT BE? WHAT SHOULD WE EXPECT

What could it be? What should we expect?

Bo's X-rays and blood test results suggest that something in the front part of the belly is enlarged. Because the liver values are also clearly increased, the liver or gallbladder area is currently the main concern. This does **not automatically mean cancer**, but cancer is one of the possibilities that should be checked because Bo is an older dog.

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1. Liver tumor or liver mass

A mass in the liver can be benign or malignant. Sometimes there is one single mass, sometimes there are many smaller nodules, and sometimes the liver is generally enlarged.

What treatment could look like

If there is **one clearly defined liver mass**, surgery may be possible. In some dogs, removing the affected liver lobe can be a good option.

If there are **many nodules or widespread liver changes**, surgery is usually less helpful. In that case, treatment is more about keeping Bo comfortable, supporting the liver, and possibly discussing further testing or oncology options.

If there is a risk of **bleeding or rupture**, this can become an emergency. Signs would include sudden weakness, collapse, pale gums, severe belly pain, or rapid worsening.

What may be done while waiting for a diagnosis

The vet may recommend liver-supportive medication, pain relief if needed, avoiding unnecessary drugs that can stress the liver, and checking blood clotting before taking any liver samples.

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2. Age-related liver nodules

Older dogs can develop benign liver nodules. These can make the liver look enlarged and can increase liver enzymes.

What treatment could look like

Often, no aggressive treatment is needed if the changes are truly benign. The usual plan would be regular monitoring, liver support if appropriate, and repeat blood tests or ultrasound checks.

The important point is: this should only be called "benign age-related change" after ultrasound has ruled out more serious problems such as a liver tumor, bile duct blockage, or gallbladder disease.

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3. Steroid-type liver change

Some dogs develop liver enlargement and very high liver enzymes because of steroid effects. This can happen from medications such as cortisone, or from the body producing too much cortisol, as in Cushing's disease.

What treatment could look like

If Bo is receiving cortisone or similar medication, the vet may consider reducing or changing it. This must be done carefully and never stopped suddenly without veterinary guidance.

If the cause is Cushing's disease, specific treatment such as trilostane may be considered, but only after proper testing confirms the diagnosis.

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4. Cushing's disease

Cushing's disease is a hormone disorder that is common in older dogs. It can cause a large liver, high ALP liver enzyme, increased thirst and urination, increased appetite, panting, a pot-bellied appearance, thin skin, and recurring infections.

What treatment could look like

If testing confirms Cushing's disease, treatment is usually medical. The most common medication is trilostane. Treatment needs careful monitoring because too much medication can suppress the adrenal glands too strongly.

Before starting treatment, Bo would need proper testing, usually with an ACTH stimulation test or low-dose dexamethasone suppression test, plus urine testing and possibly blood pressure measurement.

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5. Gallbladder or bile duct disease

The gallbladder and bile ducts sit close to the liver. Problems there can also cause high liver values, especially ALP.

Possible problems include gallbladder sludge, inflammation, bile duct blockage, or a gallbladder mucocele.

What treatment could look like

If there is only mild sludge and Bo is stable, treatment may include a low-fat diet, liver support, monitoring, and sometimes medication to improve bile flow.

If there is a gallbladder mucocele, blockage, rupture risk, or severe inflammation, surgery to remove the gallbladder may be recommended.

Medication such as ursodeoxycholic acid should **not** be started blindly if a bile duct blockage is possible.

6. Medication-related liver enzyme increase

Some medications can increase liver values, especially in older dogs.

Examples include cortisone, phenobarbital, some anti-seizure drugs, NSAID painkillers, some antibiotics, and certain supplements.

What treatment could look like

The vet would review all current medication and supplements. If one is suspected to be contributing, it may be reduced, stopped, or replaced — but only under veterinary supervision.

Repeat blood tests can show whether the liver values improve after medication changes.

7. Supportive care while waiting for answers

Until the ultrasound gives more information, treatment should focus on keeping Bo stable and comfortable.

Helpful next steps would include:

- Abdominal ultrasound as soon as possible
- Complete blood count and full chemistry panel
- Bilirubin, GGT, cholesterol, triglycerides, electrolytes and SDMA
- Urine test with urine concentration
- Blood clotting test before any liver sampling
- Blood pressure check
- Avoid unnecessary NSAIDs or steroids until the diagnosis is clearer
- Easily digestible food; low-fat diet if gallbladder or pancreas disease is suspected
- Treatment for nausea, pain, dehydration or poor appetite if present

When to seek urgent veterinary care

Bo should be seen urgently if any of these occur:

- Collapse or severe weakness
- Pale gums
- Sudden belly pain
- Repeated vomiting
- Yellow gums, eyes or skin
- Severe loss of appetite
- Difficulty breathing
- Rapid worsening of general condition

Simple overall explanation for the owner

DOGGY's tests suggest that the liver or gallbladder area is under stress, and the X-rays show that something in the front part of the abdomen looks enlarged. The next most important step is an abdominal ultrasound. That will help show whether this is a liver mass, age-related liver change, gallbladder disease, Cushing's-related liver enlargement, or something else.

The treatment depends completely on what the ultrasound shows. Some causes are manageable with medication and monitoring; others may require surgery or a more comfort-focused plan.

Treatment-oriented differential list for Veterinarian

Below is a **treatment-oriented differential list** for DOGGY, based on the combined picture: **marked cranial abdominal mass effect on X-ray + ALT 394 U/L + ALP 895 U/L + mild BUN elevation with normal creatinine**. The lab pattern supports a primary focus on **liver / biliary / endocrine-associated liver disease**, rather than primary renal failure.

1. Hepatic neoplasia / liver mass

Possible causes: primary liver tumor, nodular hepatocellular carcinoma, adenoma, metastatic disease, or mass arising adjacent to liver.

Treatment options depend heavily on ultrasound/CT findings:

Scenario	Possible treatment
Single, well-defined liver lobe mass	Surgical liver lobectomy / mass resection may be considered
Multiple liver nodules / diffuse disease	Usually not surgically curable; supportive care, biopsy/aspirate if safe, oncology discussion
Suspected metastatic disease	Staging, palliative care, oncology options depending on tumor type
Bleeding or rupture risk	Emergency stabilization, surgery if feasible

For solitary massive hepatocellular tumors, surgery can be the treatment of choice when the dog is a good anesthetic candidate and the mass is resectable. Merck notes that hepatocellular adenomas can be curable by wide resection, while hepatic mass lesions may also rupture or bleed. (Merck Veterinary Manual)

Supportive treatment while diagnosing:

- Hepatoprotective support such as SAMe/silybin, depending on veterinarian preference
- Avoid unnecessary hepatotoxic medication
- Check coagulation before liver sampling
- Pain control if abdominal discomfort is present
- Ultrasound-guided aspirate/biopsy only after coagulation assessment

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2. Nodular hyperplasia / benign age-related liver change

This is common in older dogs and can cause liver enlargement and enzyme elevations, especially ALP. It may coexist with other disease.

Treatment options:

- Often no direct treatment if benign and incidental
- Monitor ALT, ALP, bilirubin, albumin, cholesterol, CBC, urinalysis
- Liver-supportive therapy may be used if enzymes are significantly elevated

- Treat concurrent disease if present, such as Cushing's, gallbladder disease, pancreatitis, or medication effect
- Ultrasound monitoring if nodules are present but not clearly malignant

The key is not to assume it is harmless until ultrasound has excluded a discrete mass, biliary obstruction, gallbladder mucocele, or diffuse infiltrative disease.

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3. Vacuolar hepatopathy / steroid-type hepatopathy

This can occur with endogenous cortisol excess, such as Cushing's disease, or exogenous corticosteroid use. It often causes **marked ALP elevation** and hepatomegaly.

Treatment options:

Cause	Treatment approach
External corticosteroid use	Reduce/stop only under veterinary supervision; never abruptly stop chronic steroids without a taper plan
Cushing's disease	Treat hyperadrenocorticism, usually with trilostane or sometimes mitotane
Idiopathic vacuolar hepatopathy	Monitor; liver support; treat complications if present

Trilostane is widely used for canine hyperadrenocorticism and is reported as safe and effective for pituitary-dependent and adrenal-dependent disease; treatment aims to improve clinical signs while avoiding adrenal oversuppression. (PMC)

Important before treatment: confirm Cushing's with appropriate testing, because treating without confirmation can cause serious adrenal suppression.

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4. Cushing's disease / hyperadrenocorticism

This is a very relevant differential for an older dog with **very high ALP**, possible hepatomegaly, and progressive enzyme elevation.

Diagnostics before treatment:

- Urinalysis, especially urine specific gravity
- Blood pressure
- ACTH stimulation test or low-dose dexamethasone suppression test
- Abdominal ultrasound to assess adrenal glands
- Review clinical signs: PU/PD, polyphagia, panting, pot belly, thin skin, recurrent infections

Treatment options:

Type	Treatment
Pituitary-dependent Cushing's	Trilostane most commonly; mitotane alternative
Adrenal tumor	Trilostane for medical control; adrenalectomy in selected cases
Iatrogenic steroid excess	Carefully taper steroid exposure if medically possible

Treatment must be monitored closely with clinical response, electrolytes, and ACTH stimulation or equivalent monitoring protocol.

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5. Gallbladder disease / biliary obstruction / gallbladder mucocele

This is important because **ALP is markedly elevated**, and biliary disease can cause liver enzyme changes and cranial abdominal discomfort.

Treatment options depend on ultrasound findings:

Finding	Treatment
Gallbladder sludge without obstruction, stable dog	Medical management: low-fat diet, ursodeoxycholic acid if no obstruction, liver support, monitoring
Gallbladder mucocele, symptomatic dog, obstruction, inflammation, rupture risk	Cholecystectomy is usually recommended
Suspected infection/cholangitis	Antibiotics based on culture if possible; supportive care
Bile duct obstruction	Surgery or specialist intervention depending on cause

Merck states that for canine gallbladder mucocele, **cholecystectomy is the best course of treatment** and is essential for many dogs with clinical signs or evidence of biliary inflammation, obstruction, or rupture; broad-spectrum antimicrobials are recommended before surgery because bile stasis predisposes to infection. (Merck Veterinary Manual)

Caution: ursodeoxycholic acid should not be started blindly if bile duct obstruction is possible.

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6. Medication-induced liver enzyme elevation

This should be checked carefully, especially in an older dog.

Common medication/supplement triggers to review:

- Corticosteroids
- Phenobarbital or other anticonvulsants
- NSAIDs
- Some antibiotics
- Some supplements or nutraceutical combinations

- Long-term endocrine medications

Treatment options:

- Stop, reduce, or replace the suspected medication only with veterinary guidance
- Recheck chemistry after medication change
- Use gastroprotectants or liver support where appropriate
- Avoid combining potentially hepatotoxic drugs unless clearly needed
- If NSAIDs are involved, check GI bleeding risk because BUN is mildly high with normal creatinine

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7. Supportive / stabilizing care while awaiting diagnosis

Until ultrasound clarifies the origin, treatment should be supportive and risk-reducing rather than overly specific.

Reasonable supportive priorities:

- Abdominal ultrasound as soon as possible
- CBC, full chemistry, bilirubin, GGT, cholesterol, triglycerides, electrolytes, SDMA
- Urinalysis with specific gravity
- Coagulation profile before aspirate/biopsy
- Blood pressure
- Avoid unnecessary NSAIDs or steroids until diagnosis is clearer
- Feed easily digestible diet; low-fat if biliary disease/pancreatitis is suspected
- Treat nausea, pain, dehydration, or anorexia promptly
- Emergency care if collapse, pale gums, acute abdominal pain, vomiting, jaundice, severe weakness, or respiratory distress occur

Most likely treatment pathways for DOGGY

Given DOGGY's age, X-ray mass effect, and the ALT/ALP pattern, the most practical treatment pathways are:

1. **If ultrasound shows a resectable liver mass:** surgical consultation and staging.
2. **If ultrasound shows gallbladder mucocele or obstruction:** surgical referral/cholecystectomy discussion.
3. **If ultrasound shows diffuse hepatomegaly with enlarged adrenals and clinical signs fit:** test for Cushing's, then consider trilostane.
4. **If ultrasound shows benign nodular/vacuolar liver change without obstruction or mass:** liver support, medication review, monitoring, and treat underlying endocrine disease if present.
5. **If ultrasound shows diffuse metastatic/infiltrative disease:** sampling if safe, oncology/palliative plan, comfort-focused management.