

Pattern ecografici addominali: tutto chiaro o solo rumore?

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Diagnostic Mindset



Objectives

- Ultrasound can be challenging, but some pattern are typical
- Can we understand what we are seeing?



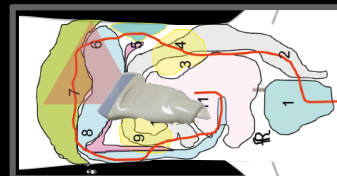
Kiwi, York Shire, FS, 11 years

- PU/PD last three months
- Mildly lethargic
- Elevated liver enzymes



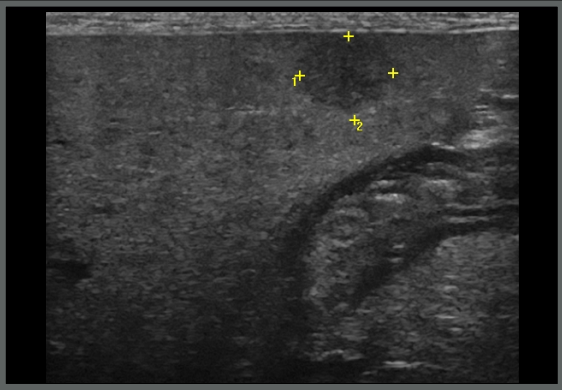
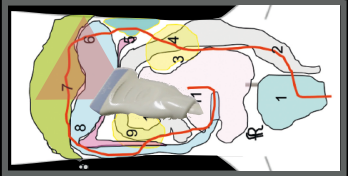

Kiwi, FS, 11 years

7-6 long



Kiwi, FS, 11 years


7-6 long

1. Margin
2. Number
3. (O) Parenchyma - Wall layering
4. Position
5. Size
6. Shape
7. Content
8. Vascularisation
9. Surrounding peritoneum

Liver

- Parenchyma
- Vessels
 - Portal vein
 - Hepatic vein
 - Hepatic artery
- Gall bladder
 - Wall
 - Content
 - Biliary system
 - Papilla



Hepatic lesion

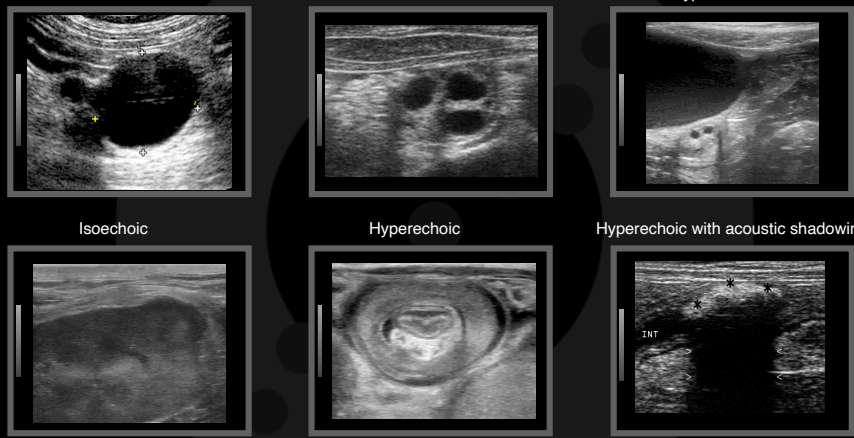
Urgent to sample

Is there a mass effect? No

- Isoechoic → Regenerative nodule **You can wait!**
- Hyperechoic → Regenerative nodules, Rare hepatocarcinoma **Benign unless proven**
- Hypoechoic → Metastasis, Regenerative nodule, Pancreatic granuloma **Don't know**
- Anechoic → Cyst, Abscess **Better to check**
- Mixed → Target lesion, Malignant **Urgent to sample unless differently proven**

Echogenicity

- Anechoic with distal reinforcement
- Anechoic
- Hypoechoic
- Isoechoic
- Hyperechoic
- Hyperechoic with acoustic shadowing



Echostructure of the liver

1. Coarse
2. Middle
3. Fine

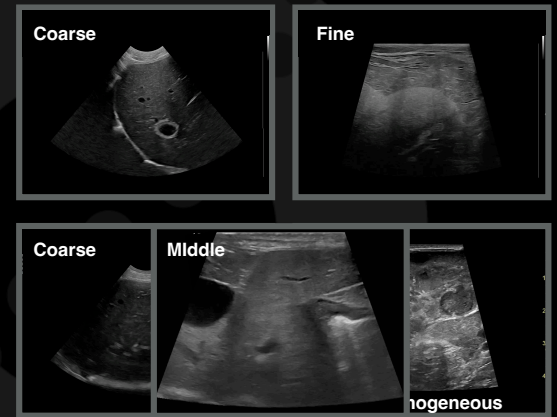
- A. Homogeneous
- B. Not homogeneous



Echostructure of the liver

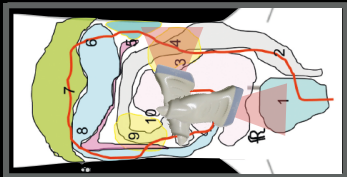
1. Coarse
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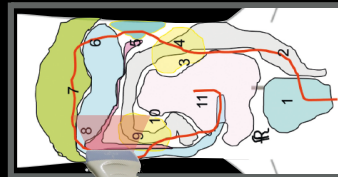
Kiwi, FS, 11 years

4-3-1 long



Kiwi, FS, 11 years

8'-9 trans



Kiwi, FS, 11 years

9-8-10 long

Kiwi, FS, 11 years

Ultrasonographic diagnoses:

- Hepatopathy
- Nefropathy
- Pancreopathy
- Adrenomegaly

How to arrive to Conclusions:

- PE examination
- Blood works
- Ultrasonographic findings
- Literature

VARIABILITY IN THE ULTRASONOGRAPHIC APPEARANCE OF THE PANCREAS IN HEALTHY DOGS COMPARED TO DOGS WITH HYPERADRENOCORTICISM

L. ABBIGAIL GRANGER, MICHAEL HILFERTY, TAYLOR FRANCIS, JÖRG M. STEINER, LORRIE GASCHEN

Anecdotally, an unusually hyperechoic pancreas can be found in seemingly healthy dogs on ultrasound examination and the prevalence and clinical significance of this finding is unknown. The objective of this study was to describe the prevalence of a hyperechoic and/or heterogeneous pancreas in healthy dogs and correlate these findings to weight, age, and body condition score (BCS). An additional objective was to describe the prevalence of a hyperechoic and/or heterogeneous pancreas in dogs with hyperadrenocorticism and compare this to the healthy dogs. Pancreata of 74 healthy dogs were evaluated prospectively and pancreatic echogenicity and echotexture were graded. Each dog's age, BCS, and weight were recorded. Dogs were screened for health by physical examination, serum chemistry panel, urine specific gravity, and a canine pancreatic lipase immunoreactivity assay. Pancreatic images for 92 dogs having hyperadrenocorticism were also reviewed and pancreatic echogenicity and echotexture were recorded. The prevalence of pancreatic hyperechogenicity in normal dogs was 7% (5 of 74) and heterogeneity was 40% (30 of 74). No correlation existed between pancreatic echogenicity and weight, age, or BCS ($P > 0.1$ for all sets). A statistically significant increase in the proportion of dogs having a hyperechoic pancreas was found in the hyperadrenocorticism sample of dogs (40%, 37 of 92, $P < 0.0001$). The underlying cause of pancreatic variability in the few healthy dogs and in dogs with hyperadrenocorticism is unknown and the varying appearance of the pancreas in these samples confounds interpretation of diseases such as chronic pancreatitis. © 2015 American College of Veterinary Radiology.

Vet Radiol Ultrasound, Vol. 56, No. 5, 2015, pp 540-548.

Kiwi, FS, 11 years

Conclusions:

- Steroid hepatopathy
- Adrenomegaly / nodule
- Consider to rule out hyperadrenocorticism

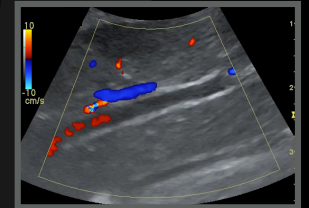


Next steps:

	Det.	Risultato	Intervallo di riferimento	
			min	max
Cortisolo basale e post ACTH LC-MS-MS (due determinazioni)				
Cortisolo sierico LC-MS-MS (µg/dl) :	1	2.44	0.29	1.47
Cortisolo sierico LC-MS-MS (µg/dl) :	2	24.34	1.74	5.29
Operazioni	Qty	Descrizione	Confezione	Posologia
	1	VEVORYL 10	fas di tai 30 capsule da 5 mg	Una capsula al mattino ad orario fisso con il cibo

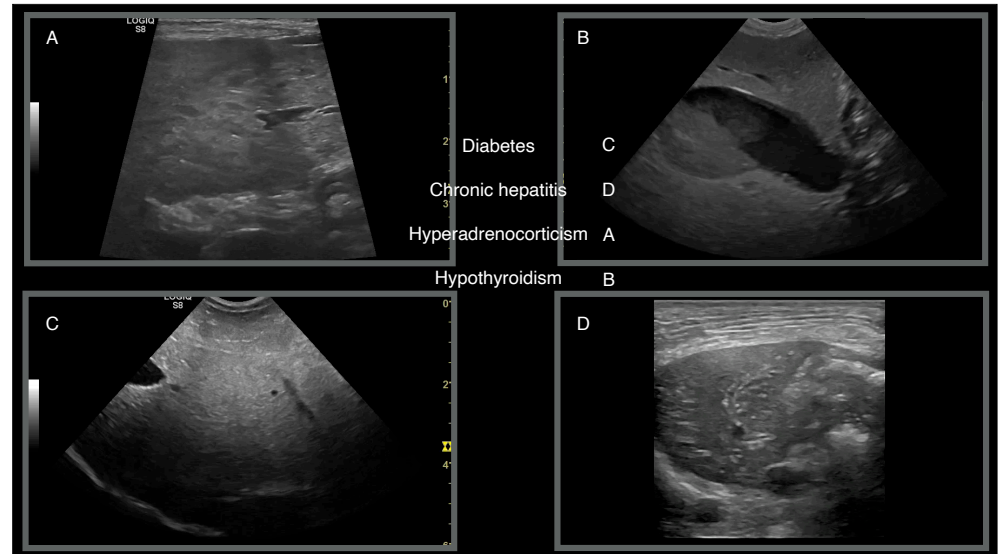
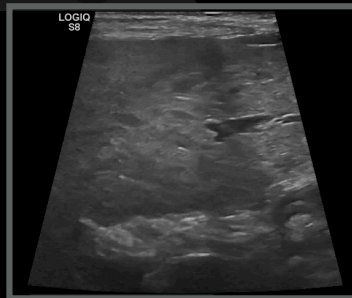
Key points
How to differentiate hyperechoic liver diseases in dogs

- Liver parenchyma
 - Homogeneous → Non-specific reactive H
 - Not homogeneous → Endocrinopathy
- Intestine
- Pancreas
- Kidney
- Adrenals
- Chronic degenerative changes VS fat infiltration
- Chronic hepatitis leading towards cirrhosis
- Signs of portal hypertension or hepatic arterialisation?



Key points
Steroid hepatopathy

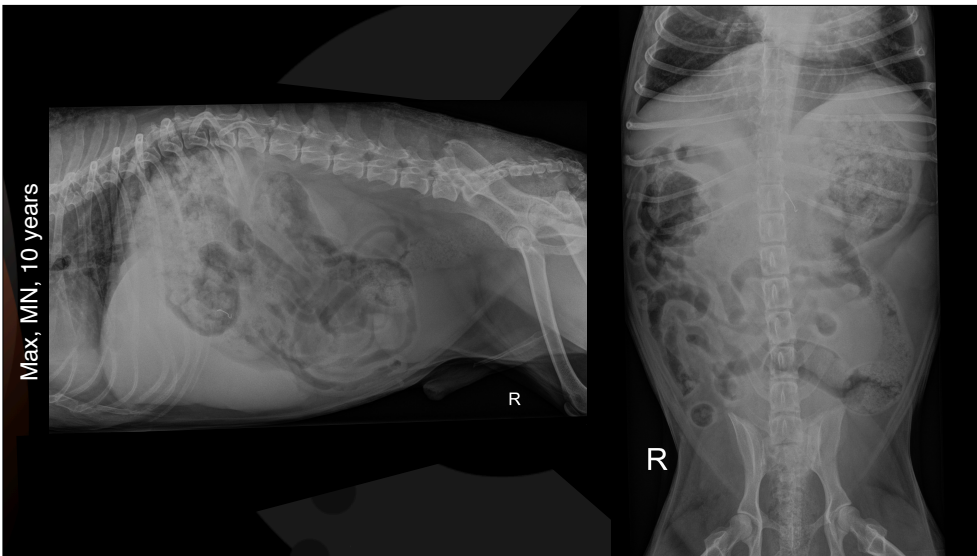
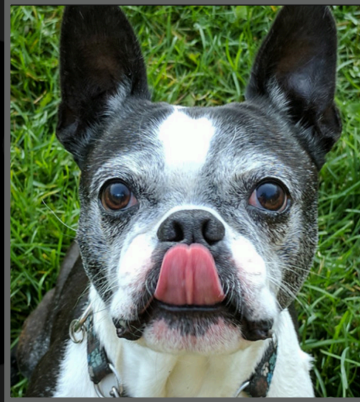
- PU/PD
- Hyperechoic not homogeneous liver parenchyma
- No severe hepatic arterialisation
- Associated with fat infiltration of kidneys and pancreas



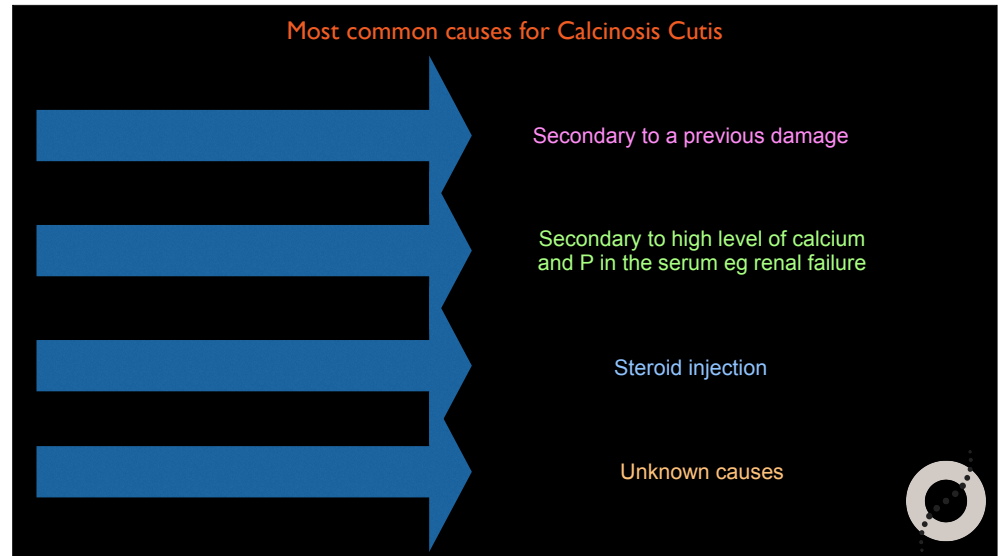
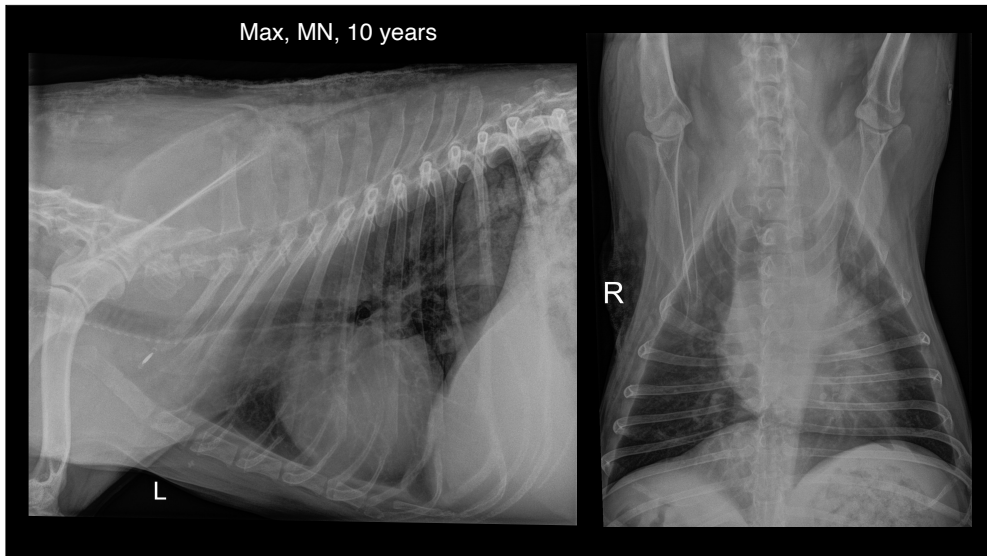
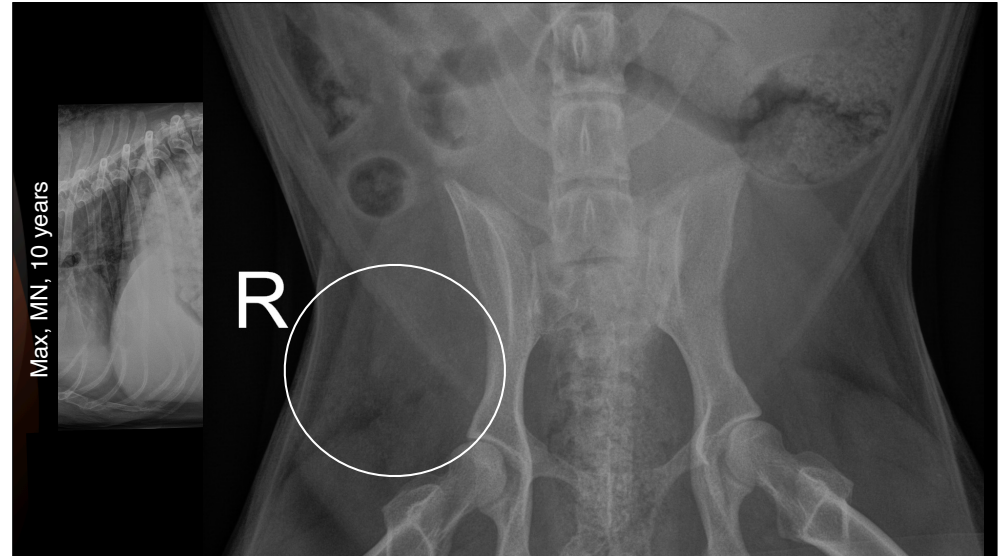
Mac, Boston Terrier, MN, 10 years

PU/PD for three months

Cutaneous papules seen lately



Your evaluation

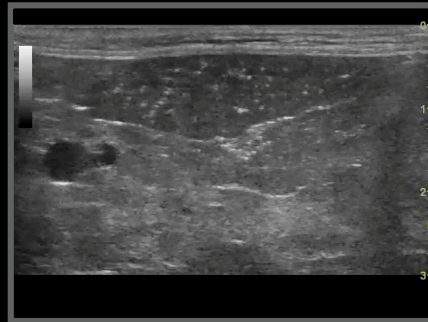
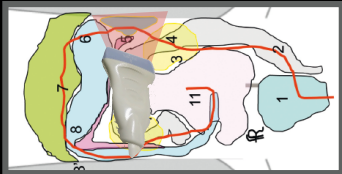


Lilly, FS, 10 years



Probe position in a different patient

5



Leon, Maremman, MI, 9 years

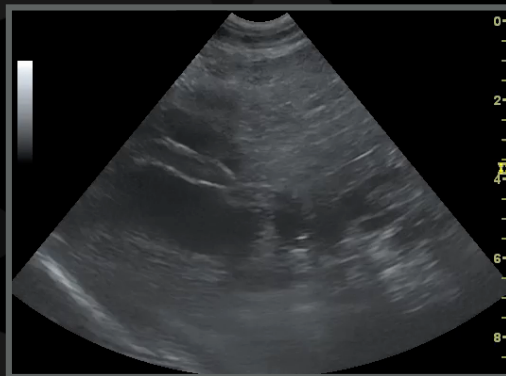
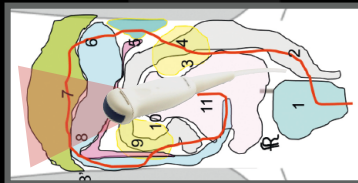
- Weak
- Anorexic
- Fast respiratory rate



Leon, MI, 9 years

7-8

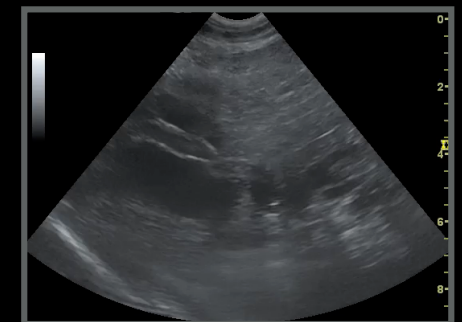
Probe position in a different patient

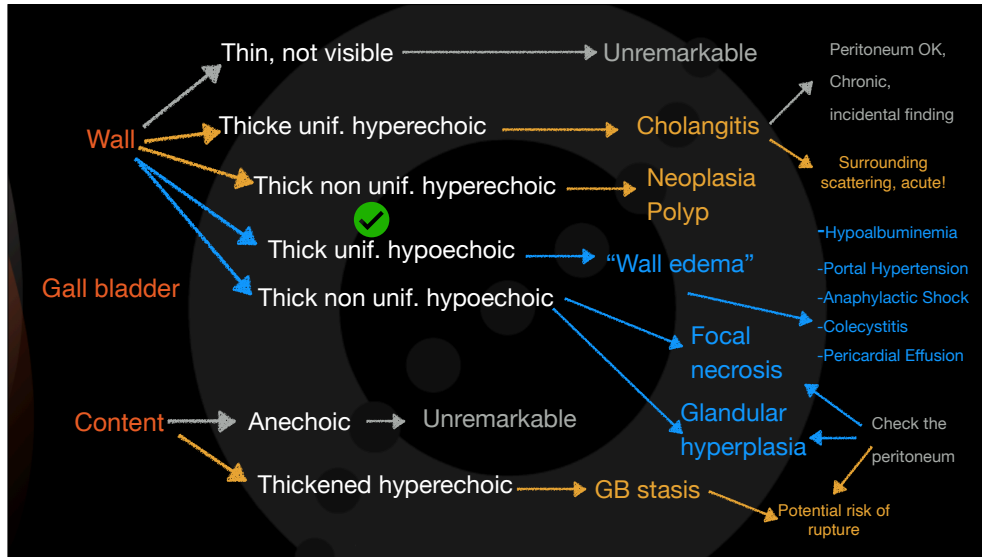


Leon, Maremman, MI, 9 years



- | | |
|-------------------------|----------------------------|
| Gall bladder wall: | Thickened
Hypoechoic |
| Content: | Anechoic |
| Surrounding peritoneum: | Effusion,
no scattering |





Leon, Maremman, MI, 9 years

- Hypoalbuminemia
- Portal Hypertension
- Anaphylactic Shock
- Cholecystitis
- Pericardial Effusion

Probe position in a different patient

Leon, MI, 9 years

1A

Probe position in a different patient

Leon, MI, 9 years

1A

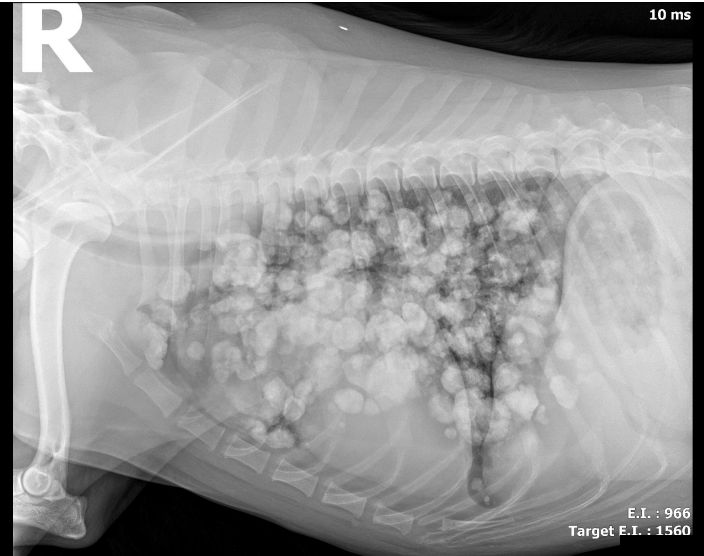
Leon, Maremman, MI, 9 years

Ultrasonographic diagnoses:

- GB wall "edema"
- Pericardial mass



- Drained
- The owner refused pericardiectomy



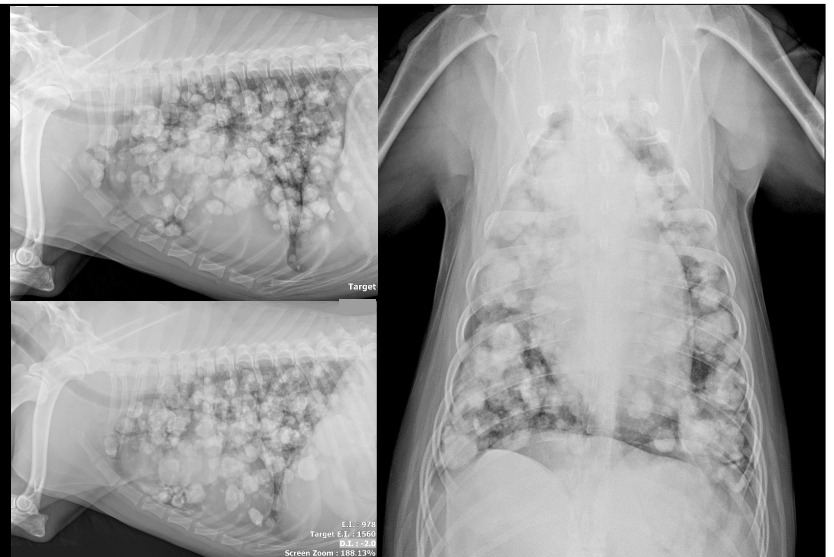
Leon, MI, 9 years



Leon, MI, 9 years



Leon, MI, 9 years



Leon, Maremman, MI, 9 years

Radiographic diagnoses:

- Several mineralized irregular lung nodules



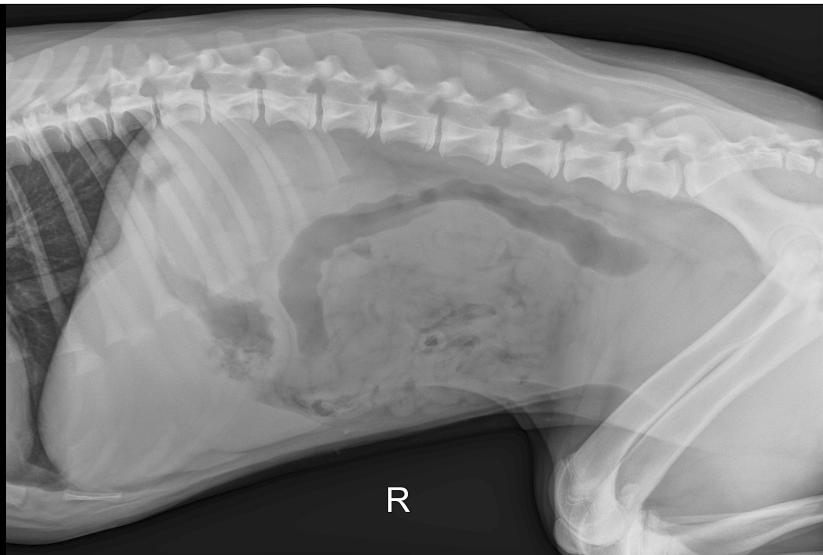
- Dyspneic one month later

Abby, Bloodhound, FI, 4 months

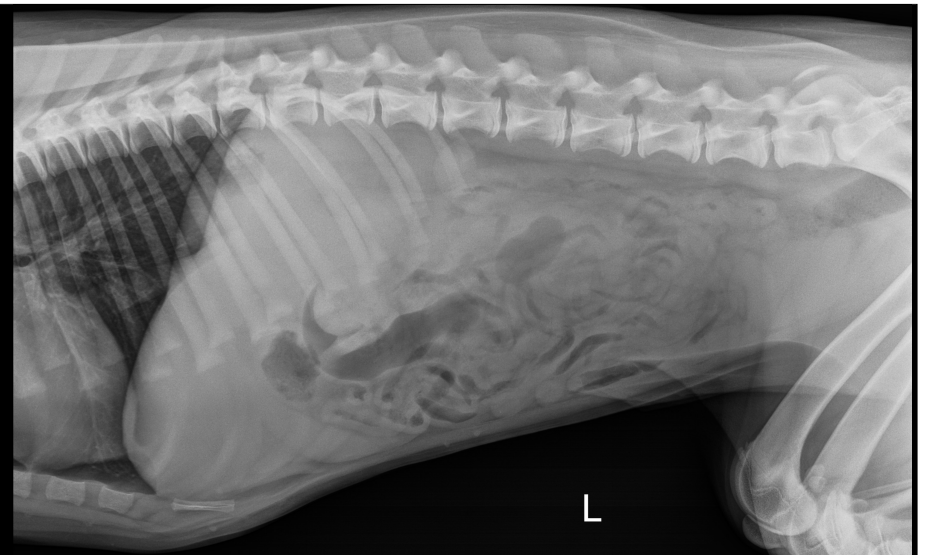
- Two days of watery diarrhea progressed to hemorrhagic
- Small worms in the stool
- Today anorexic but still active

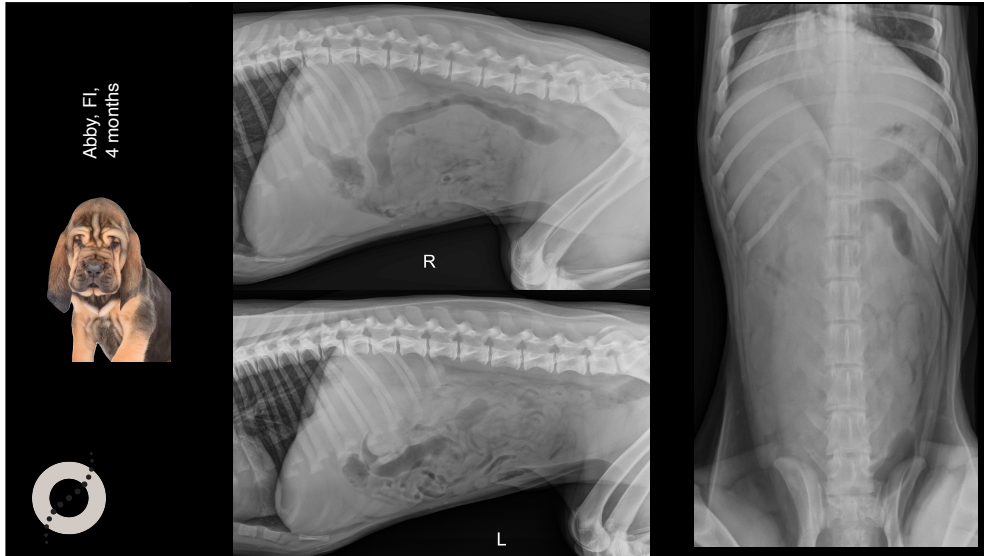


Abby, FI,
4 months



Abby, FI, 4 months

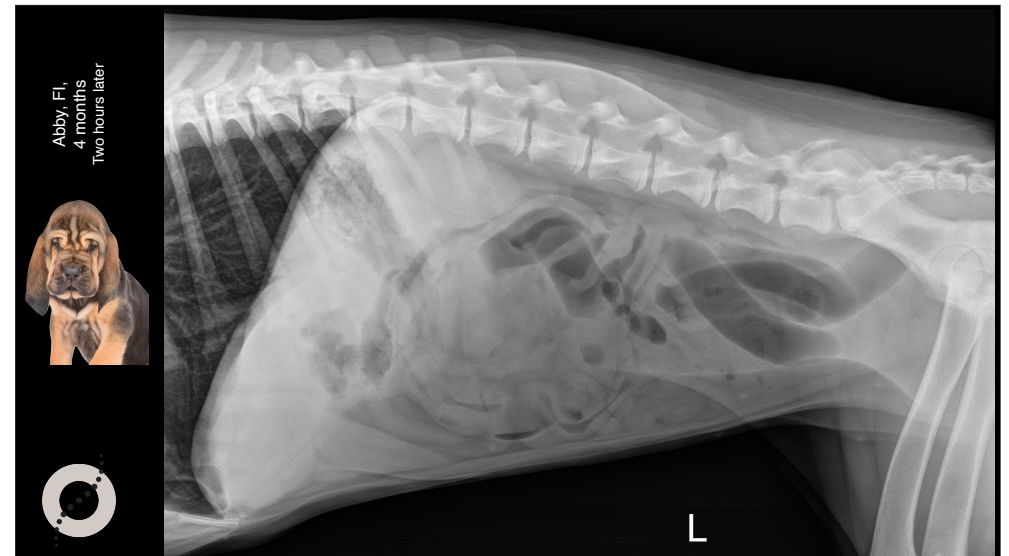
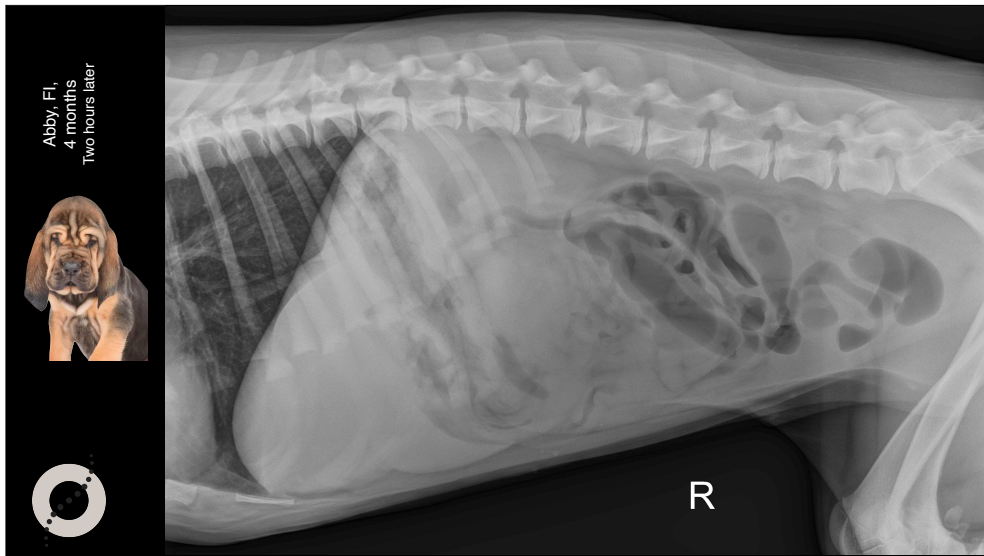




Abby, Bloodhound, FI, 4 months

- More active under fluid
- One bout of hemorrhagic stools
- Recheck two hours later

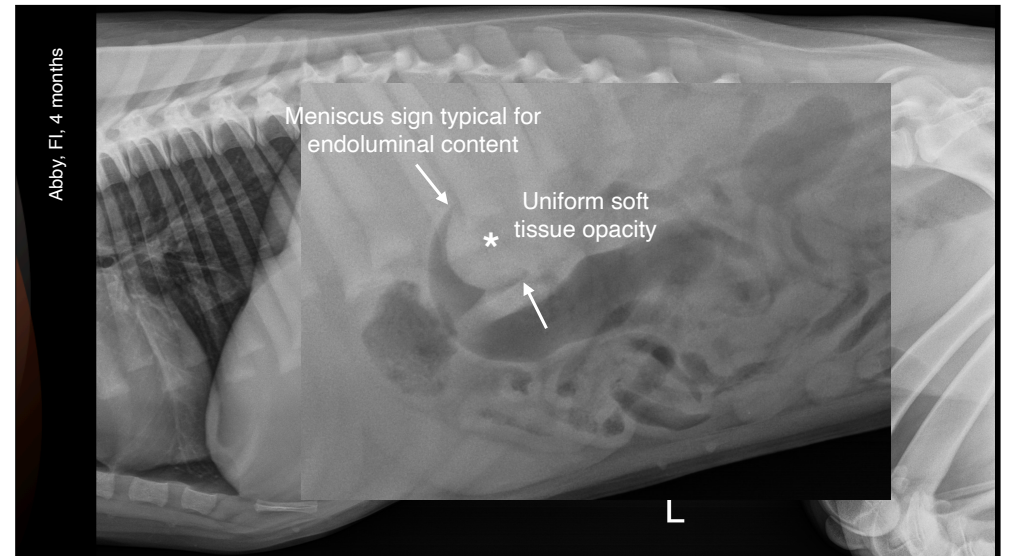
A photograph of a 4-month-old Bloodhound puppy, Abby, sitting and looking towards the camera. The puppy has characteristic large, floppy ears and a wrinkled face.

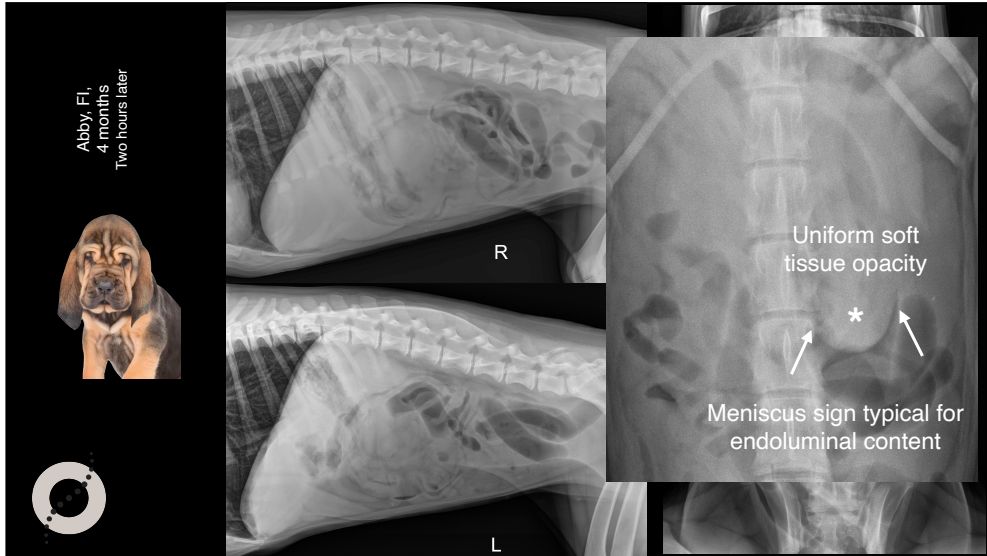




Your evaluation

- Is there a foreign body?
- Is there gastroenteritis?
- Is there a gastrointestinal occlusion?





Key points

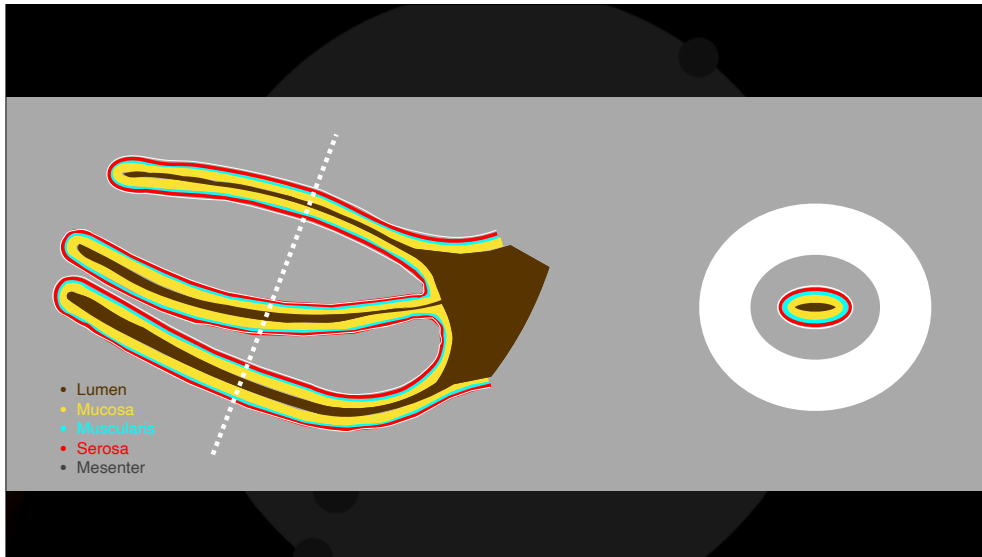
- Typical clinical signs
- Meniscus sign
- Soft tissue opacity

Abby, FI, 4 months

Another patient, to show the position of the probe

11

- Lumen
- Mucosa
- Muscularis
- Serosa
- Mesenter



Conclusions

- Recognizing specific patterns enables a more targeted and accurate ultrasound interpretation
- Radiology can support and confirm the diagnosis

Thank you

Diagnostic Mindset
www.diagnosticmindset.com