

Uno scorcio della cavità toracica durante l'ecografia addominale: incidentali o campanelli d'allarme?

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Objectives

- The abdominal–thoracic interface should be evaluated
- All artifacts should be assessed



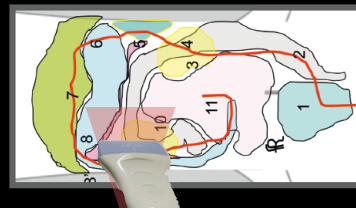
Lilli, Mongrel, FS, 12 years

- Jaundiced
- Treated for pancreatitis
- Not responding
- Blood work pending



Lilli, FS, 12 years

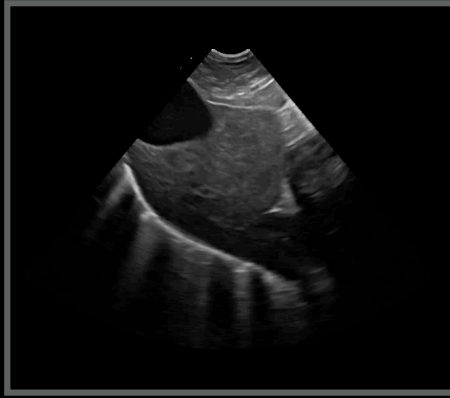
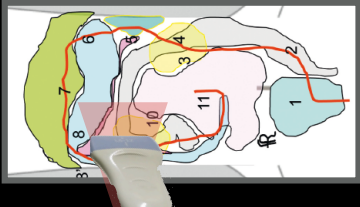
Probe position in a different patient



Lilli, FS, 12 years

Probe position in a different patient

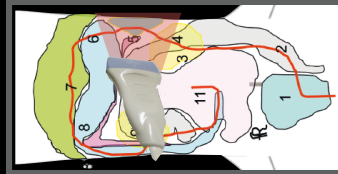
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Lilli, FS, 12 years

Probe position in a different patient

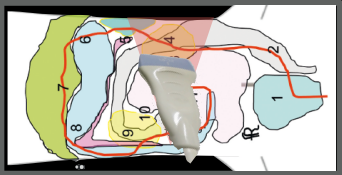
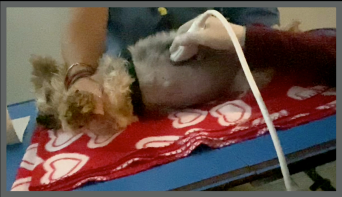
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Lilli, FS, 12 years

Probe position in a different patient

4



Lilli, FS, 12 years

Probe position in a different patient

8'



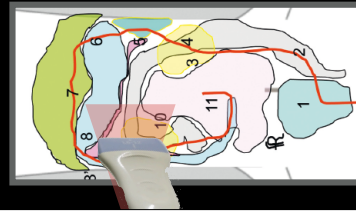
Lilli, Mongrel, FS, 12 years

- Why she is not responding to treatment?
- What would you do next?



Lilli, FS, 12 years

Probe position in a different patient



8

Lilli, FS, 12 years



Lilli, FS, 12 years

Final diagnosis pancreatic adenocarcinoma



Sharky, Wirehaired Dachshund, MI, 6 years

- Trembling
- Not moving
- Not eating
- Vomiting



Sharky, MI, 6 years

Blood works



RBC (milioni /µL)	7.42	5.70	8.56	Acanociti:	Elliptociti:
HGB (g/dL)	16.4	14.1	21.2	Anisocitosi:	Ipcromia:
HCT (%)	46.8	39.0	59.2	Agglutinazione:	Macrocti:
MCV (fL)	63.1	63.1	72.6	Codociti:	Microciti:
MCH (pg)	22.1	21.8	25.4	Cherociti:	Parassiti eritrocitari:
MCHC (g/dL)	35.1	33.3	36.8	Cnizociti:	Policromasia:
CHCM (g/dL)		34.3	37.8	Corpi di Heinz:	Punteggiature basofile:
MCHC/CHCM:		0.94	1.01	Corpi di Howell-Jolly:	Rouleaux:
CH (pg)		22.0	26.0	Cristalli di Hb:	Schistociti:
CHDW (pg)		2.72	3.34	Dacriociti:	Selenociti:
RDW (%)	12.8	11.6	14.7	Drepanociti:	Sferociti:
HDW (g/dL)		1.63	2.22	Eccentricociti:	Stomatociti:
NRBC/100 WBC:	0	0	0	Echinociti:	Torociti:
Varie RBC:					
WBC (x 1000 /µL)	14.9	5.45	12.98	Linfociti attivati:	
Conta corr. WBC (x 1000 /µL)		5.45	12.98	Linfociti atipici:	
Mielociti (µL)	0	0	0	Neutrofili tossici:	
Metamielociti (µL)	0	0	0	Corpi di Doehle:	
Neutrofili banda (µL)	0	0	286	Schlumosità citopl.:	
Neutrofili segmentati (µL)	12069	3555	9314	Vacuolizzazione citopl.:	
Linfociti (µL)	1490	1169	3810	Basofilia citopl.:	
Monociti (µL)	1341	186	798	Granuli tossici:	
Eosinofili (µL)	100	104	1164	Neutrofili giganti:	
Basofili (µL)	20	0	106	Macropoliciti:	
Danneggiate (µL)	0	0	0		
Indifferenziate (µL)	0	0	0		
Altre (µL)	0	0	0		
Varie WBC:					
PLT (1000 /µL)	303	176	479	Stima PLT:	ADEG.: <input checked="" type="checkbox"/> INADEG.: <input type="checkbox"/> AUMENT.: <input type="checkbox"/>
MPV (fL)	8.0	8.9	15.0	Varie:	Piastrine attivate: <input type="checkbox"/> Macropiastrine: <input type="checkbox"/>
PCT (%)	0.243	0.21	0.52		Piastrine allungate: <input type="checkbox"/> Inclusi piastrinici: <input type="checkbox"/>
PDW (%)	14.3	51.8	74.5		

Sharky, MI, 6 years

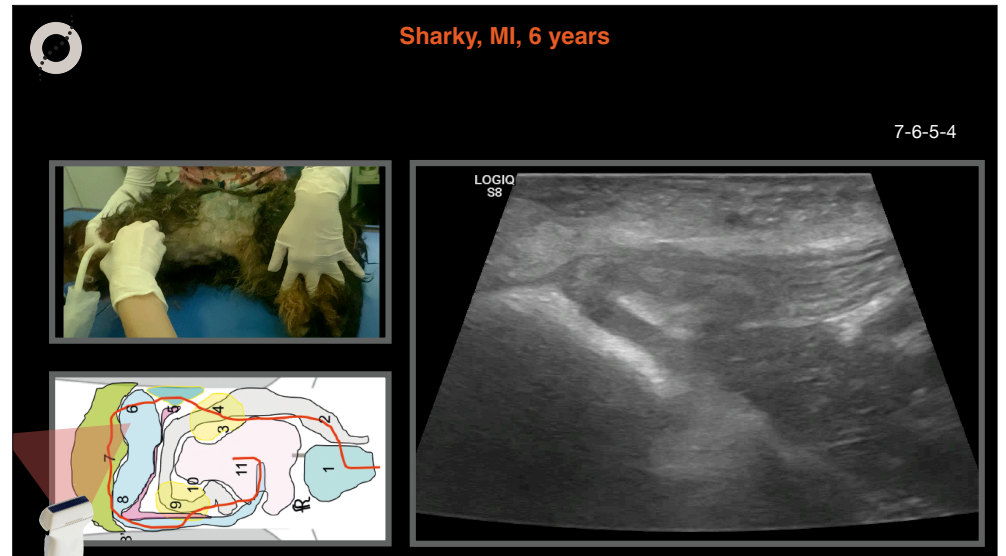
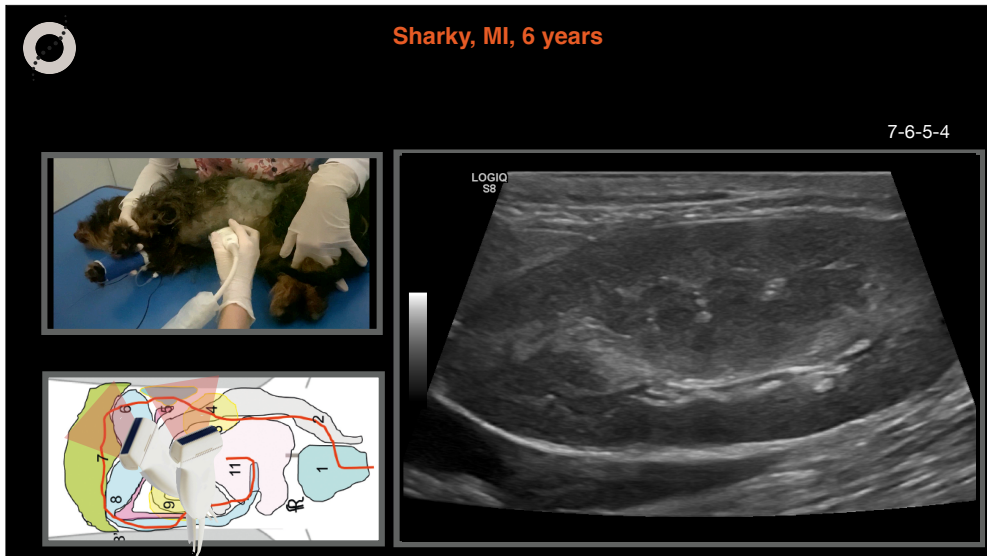
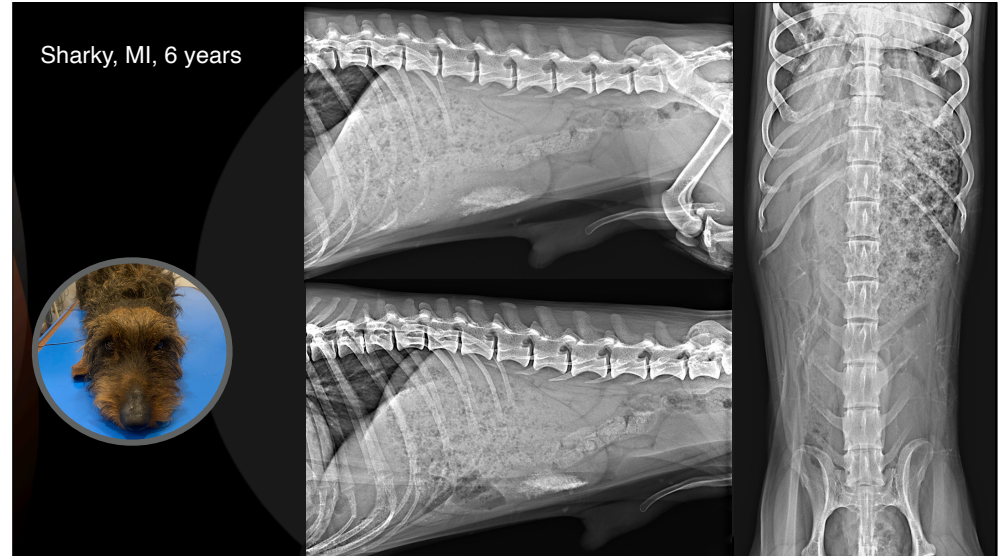
Blood works

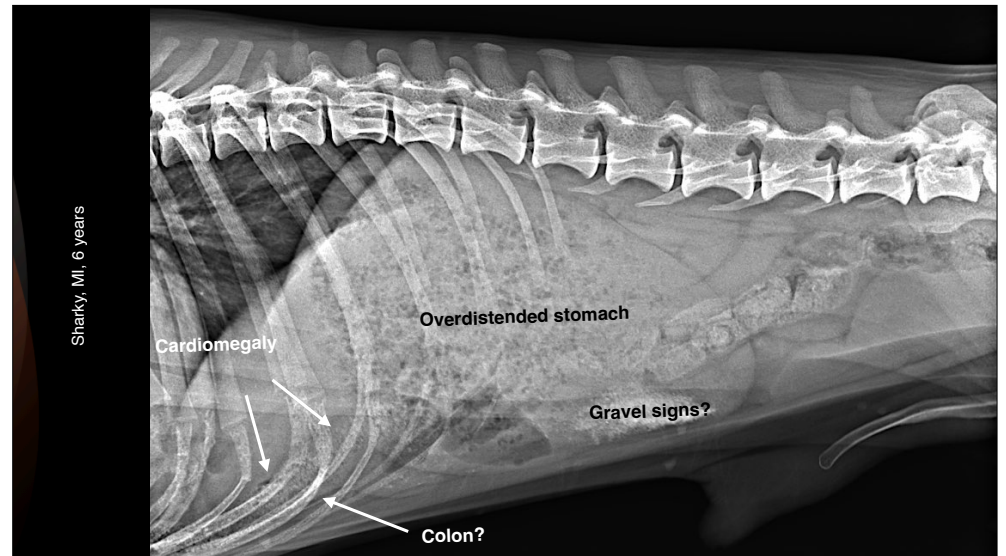
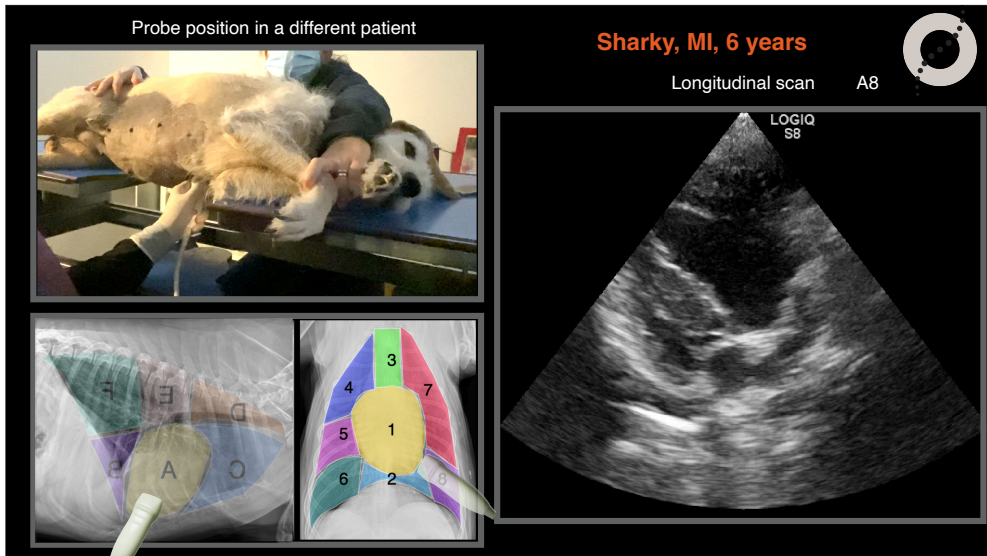
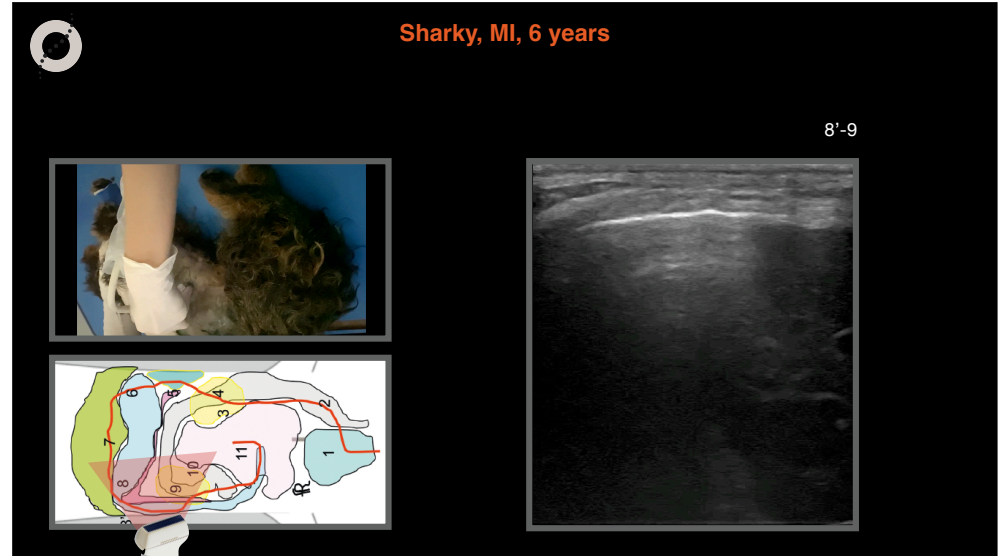
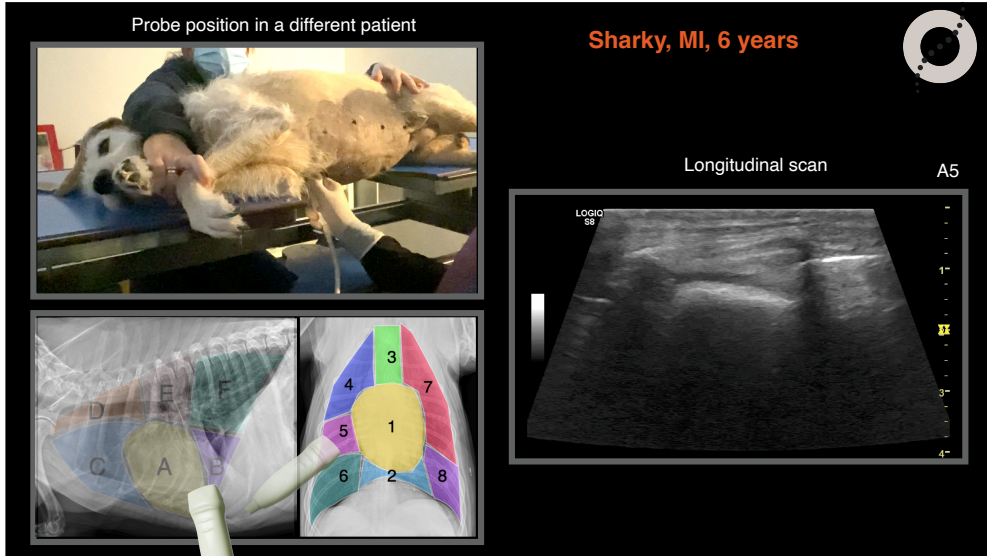


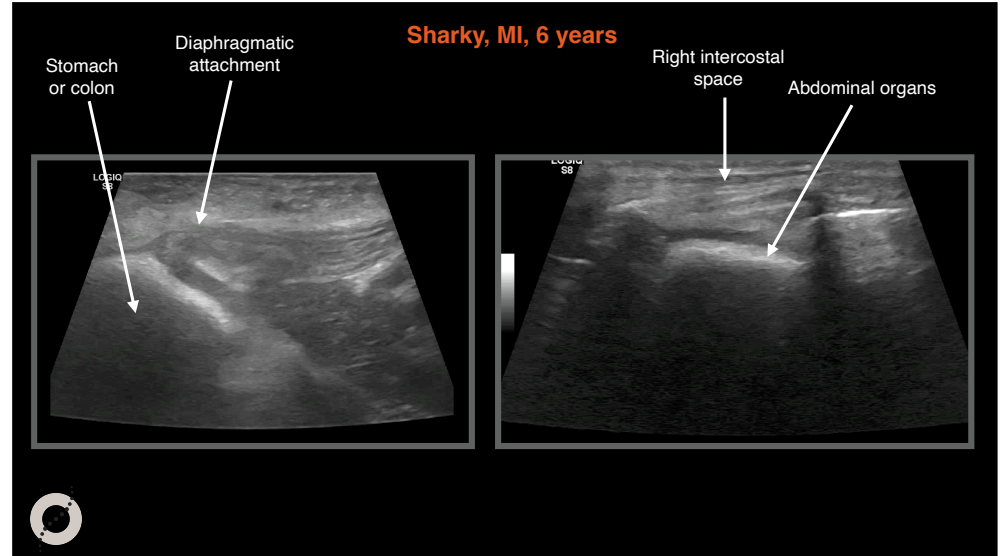
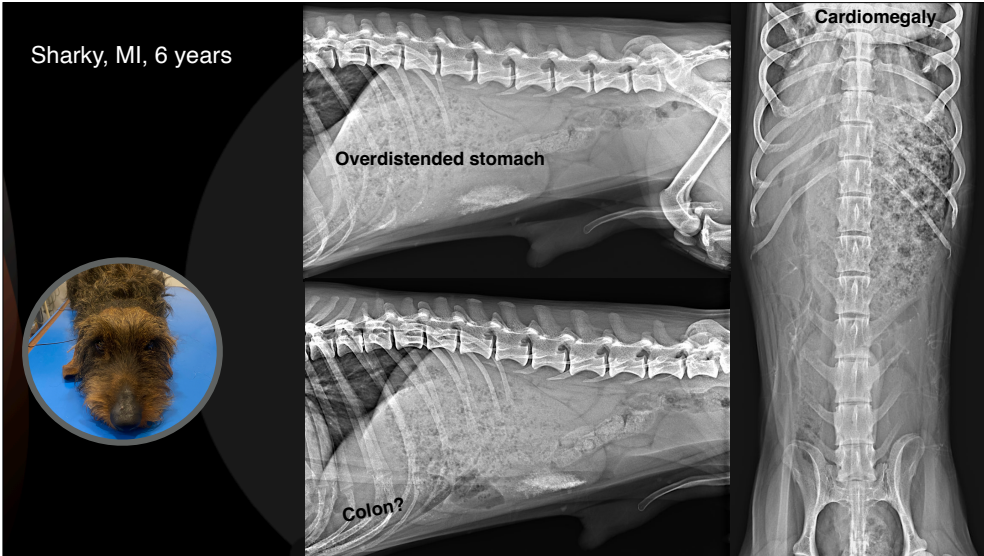
CPK (IU/L)	117	42-155	Osmolalità (mosm/Kg)	412	1955
AST (IU/L)	23	20-50	Peso Specifico:	1050	1010 1056
ALT (IU/L)	108	15-50	pH:	5.5	5.5 8.5
ALP (IU/L)	41	20-110	Glucosio Urinario (mg/dl)	0	0 0
GGT (IU/L)	5.4	1-11	Chetoni (mg/dl)	0	0 0
Colinesterasi (IU/L)		3347-7074	Bilirubina (mg/dl)	0	0.0 0.5
Bilirubina Totale (mg/dL)	0.33	0.15-0.4	Sangue occulto - Hb e Mb:	negativo	NEGATIVO
Proteine Totali (g/dL)	7.3	5.5-7.5	Proteine (semiquantitative) (mg/dl)	100	0 150
Albumine (g/dL)	3.5	2.7-3.6	WBC/hpf:	10	0 3
Globuline (g/dL)	3.8	2.6-3.9	RBC/hpf:	5	0 3
Rapporto A/G:	0.92	0.7-1.2	Cilindri:	++	ASSENTI RARI
Colesterolo (mg/dL)	93	150-350	Cristalli:	+	ASSENTI RARI
Trigliceridi (mg/dL)	43	30-110	Batteri:	assenti	ASSENTI ASSENTI
AMILASI (IU/L)	385	300-1800	Cellule Epiteliali:	++	ASSENTI RARE
LIPASI (IU/L)		121-725	Proteine quantitative (mg/dl)	249	5 80
Urea (mg/dL)	29	18-45	Creatinina (mg/dl)	287	81 431
Creatinina (mg/dL)	0.56	0.75-1.3	Rapporto PUUCU:	0.9	0.1 0.5
Glucosio (mg/dL)	112	60-100	Note:		
Calcio (mg/dL)	9.6	8.2-12	*cilindri granulosi		
Fosforo (mg/dL)	3.6	2.1-6.2	**urati amorfi e di bilirubina		
Magnesio (mg/dL)		0.67-0.94	***numeroso cellule epiteliali squamose e di transizione		
Sodio (mEq/L)	144	143-151	FI02 (%)		
Potassio (mEq/L)	4.8	3.9-5.1	pH:	7.314	7.36 7.49
Rapporto Na/K:	31.3	28.5-37.4	pCO2 (mmHg)	39.0	35.0 45.0
Cloro (mEq/L)	111	109-118	pO2 (mmHg)	40.8	35.1 64.3
Cloro corretto (mEq/L)	112.5	109.1-115.9	Na+ (mmol/L)	147.6	135 145
HCO3- (mmol/L)		18.4-24.8	K+ (mmol/L)	3.88	3.65 4.7
Divario Anionico:		13.1-18.4	Ca++ (mmol/L)	1.30	1.25 1.5
Osmol. sier. calc.	282	277-291	Cl- (mmol/L)	108.8	110 118
Ferro totale (µg/dL)	88	100-200	Lat (mmol/L)	7.1	0.5 2.5
UIBC (µg/dL)		182-306	Het (%)	49.0	36 51
TIBC (µg/dL)		318-479	HCO3- (mmol/L)	20.0	17.5 26.4
Saturazione (%)		28.2-56.8	TCO2 (mmol/L)	21.2	17.5 20
Prot. C Reattiva (mg/dL)	0.01	0.01-0.22	BEb (mmol/L)	-5.1	-3 +3
			BEecf (mmol/L)	-6.4	-6.6 +2.7
			SBC (mmol/L)	19.6	
			sO2c (%)	72.0	
			Ca++ (pH 7.4) (mmol/L)		
			Gap Anionico (mmol/L)	22.7	12 20

Sharky, MI, 6 years

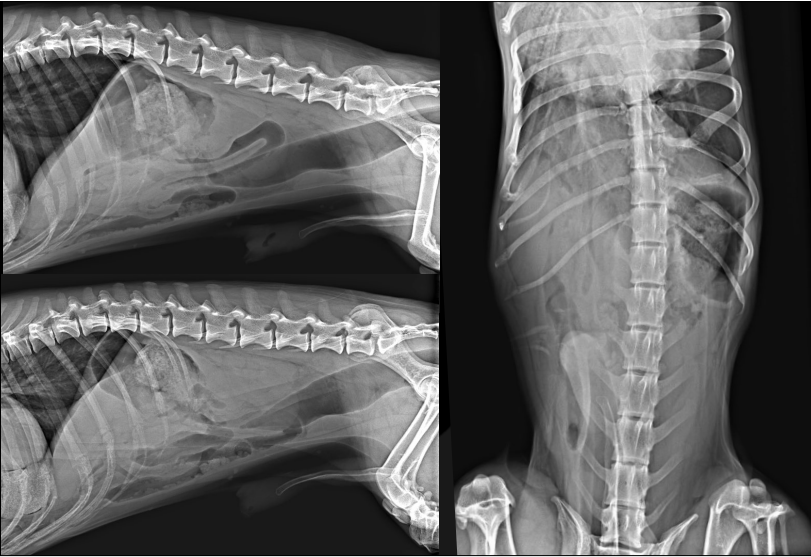








Sharky, MI, 6 years



Sharky, Wirehaired Dachshund, MI, 6 years

Radiographic diagnoses:

- Overdistended stomach
- Cardiomegaly?
- Displaced colon?



Sharky, Wirehaired Dachshund, MI, 6 years

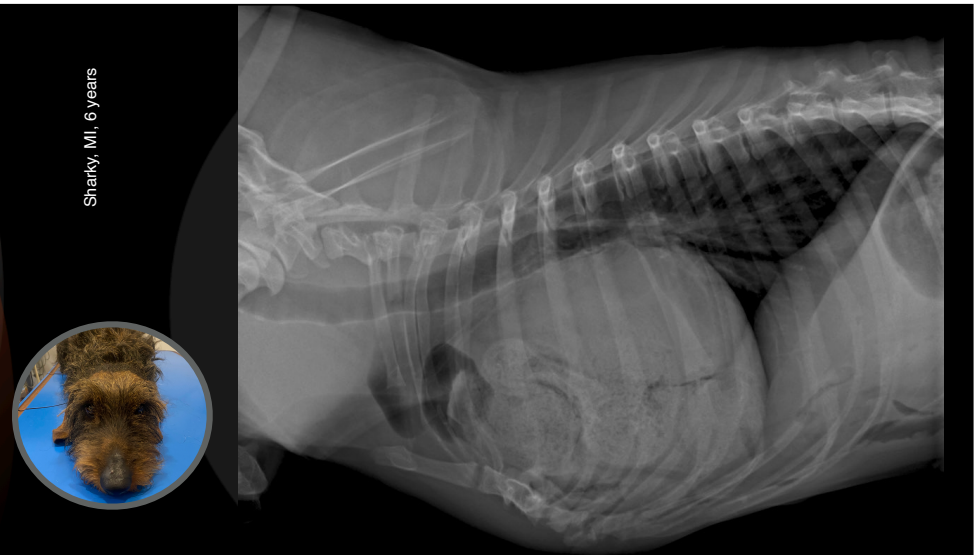
Ultrasonographic diagnoses:

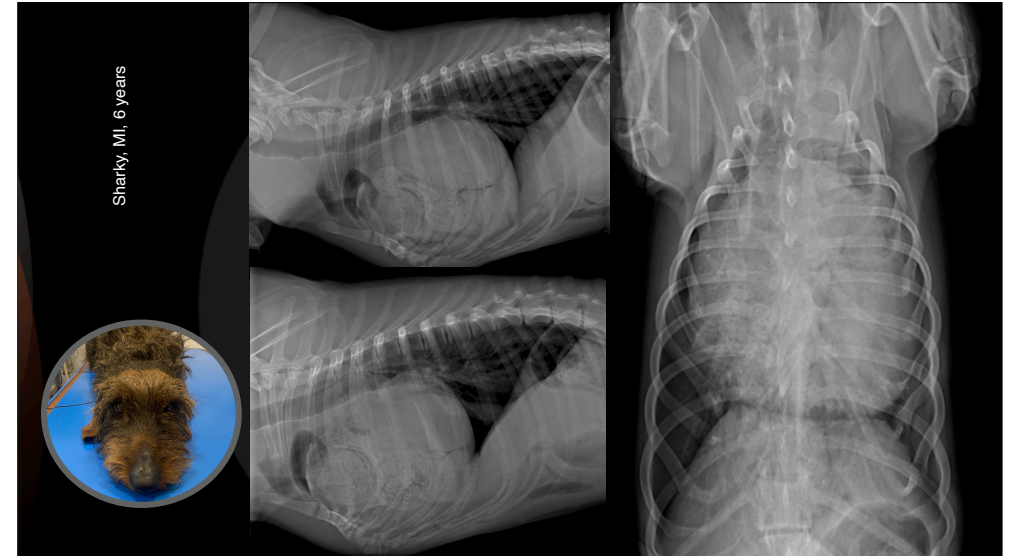
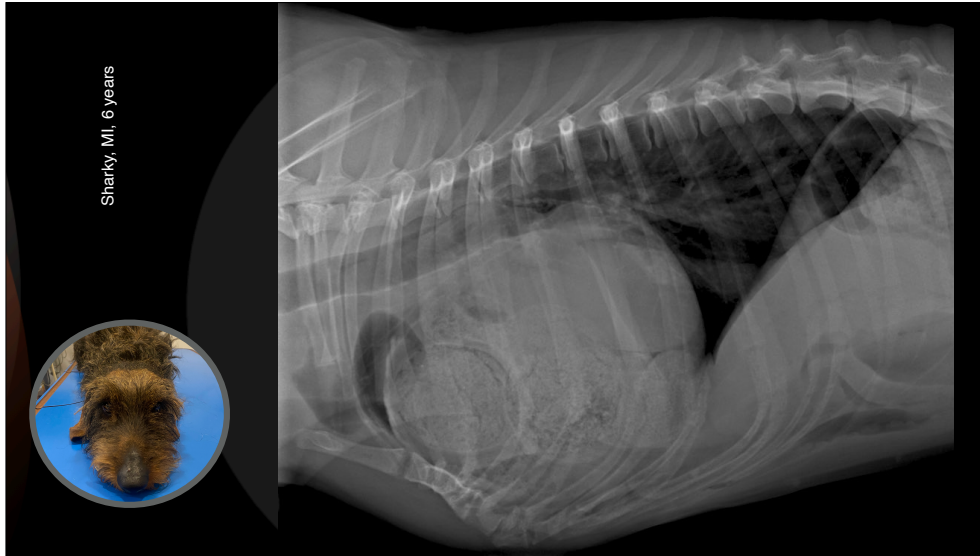
- Abdominal organs displaced in the chest
- Left displacement of the cardiac silhouette



What next?

Sharky, MI, 6 years





Sharky, Wirehaired Dachshund, MI, 6 years

Final diagnoses:

- Congenital PPDH
- Constipation
- Underlying chronic enteritis

What next?

Sharky, Wirehaired Dachshund, MI, 6 years

Follow up

- Several episodes of acute abdomen: surgery and GE biopsy were performed
- Eosinophilic-plasmacytic chronic enteritis
- Managed well with immunosuppressive treatment (Mycophenolate)

Still doing fine 1 year later

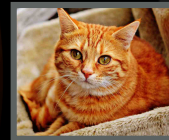
Romeo, DSH, MN, 1 year

- For two days lethargic and anorexic
- Chronic vomiting once a week for the last four months
- Tense abdomen and mild dehydration on PE



Romeo, 1 year

Blood works



RBC (milioni /µL):	8.14	6.35	9.50	Acanociti:	+	Elipociti:	
HGB (g/dL):	10.5	9.6	14.3	Anisocitosi:		Ipcromia:	
HCT (%):	29.2	28.0	42.5	Agglutinazione:		Macrociti:	
MCV (fL):	35.8	38.0	49.5	Codociti:		Microciti:	
MCH (pg):	12.9	12.6	16.0	Cherociti:		Parassiti eritrocitari:	
MCHC (g/dL):	36.0	31.0	35.0	Cnizociti:		Policromasia:	
CHCM (g/dL):		30.0	33.5	Corpi di Heinz:		Punteggiature basofile:	
CH (pg):		12.0	15.5	Corpi di Howell-Jolly:		Rouleaux:	
CHDW (pg):		1.70	2.70	Cristalli di Hb:		Schistociti:	
RDW (%):	18.8	14.2	17.4	Dacrociti:		Selenociti:	
HDW (g/dL):		1.60	2.50	Drepanociti:		Sferociti:	
NRBC/100 WBC:	0	0	0	Eccentricociti:		Stomatociti:	
				Echinociti:		Torociti:	
Varie RBC:							
WBC (x 1000 /µL):	11.1	5.0	11.0	Linfociti attivati:	+		
Conta corr. WBC (x 1000 /µL):		5.0	11.0	Linfociti atipici:			
Mielociti (/µL):	0	0	0	Neutrofilii tossici:			
Metamielociti (/µL):	0	0	0	Corpi di Doehle:			
Neutrofilii banda (/µL):	0	0	300	Schiumosità citopl.:			
Neutrofilii segmentati (/µL):	9213	2500	7000	Vacuolizzazione citopl.:			
Linfociti (/µL):	1332	1300	5500	Basofilia citopl.:			
Monociti (/µL):	111	65	250	Granuli tossici:			
Eosinofili (/µL):	444	70	800	Neutrofilii giganti:			
Basofili (/µL):	0	0	110	Macroplociti:			
Danneggiate (/µL):	0	0	0				
Indifferenziate (/µL):	0	0	0				
Altre (/µL):	0	0	0				
Varie WBC:							
PLT (1000 /µL):	434	130	430	Stima PLT:		ADEG: <input type="checkbox"/>	INADEG: <input type="checkbox"/>
MPV (fL):	12.6	7.9	17.5	Varie:		Piastrine attivate: <input type="checkbox"/>	Macropiastrine: <input type="checkbox"/>
PCT (%):	0.545	0.20	0.50			Piastrine allungate: <input type="checkbox"/>	Inclusi piastrinici: <input type="checkbox"/>
PDW (%):	14.4	55.0	70.0				

Blood works

CPK (IU/L):	492	40-150		
AST (IU/L):	28	20-60		
ALT (IU/L):	33	15-50		
ALP (IU/L):	41	10-70		
GGT (IU/L):	1.8	1.5-12		
Colinesterasi (IU/L):		1955-3950		
Bilirubina Totale (mg/dL):	0.22	0.1-0.5	Tempo di tromboplastina parziale attivata - aPTT (sec.):	74.7
Proteine Totali (g/dL):	7.5	5.8-8	Tempo di protrombina - PT (sec.):	12.6
Albumine (g/dL):	4.2	2.5-4.0	Fibrinogeno (mg/dL):	309
Globuline (g/dL):	3.3	2.8-5.5	Prodotti di degradazione della fibrina/fibrinogeno - FDPa (µg/mL):	3.71
Rapporto A/G:	1.27	0.4-1.3	Antitrombina (%):	121
Colesterolo (mg/dL):	93	70-200		
Trigliceridi (mg/dL):	31	30-100		
AMILASI (IU/L):	908	350-1800		
Urea (mg/dL):	29	20-65		
Creatinina (mg/dL):	1.10	0.7-1.6		
Glucosio (mg/dL):	159	80-145		
Calcio (mg/dL):	9.0	8.0-11.2		
Fosforo (mg/dL):	4.2	2.6-5.0		
Magnesio (mg/dL):		0.81-1.05		
Sodio (mEq/L):	150	141-155		
Potassio (mEq/L):	4.5	3.0-5.5		
Rapporto Na/K:	33	31-43		
Cloro (mEq/L):	116	110-130		
Cloro corretto (mEq/L):	121	112-119		
HCO-3 (mmol/L):		12.0-22.5		
Divario Anionico:		-		
Osmol. sier. calc. (mOsm):	293	285-296		
Ferro totale (µg/dL):	34	110-170		
UIBC (µg/dL):		130-225		
TIBC (µg/dL):		175-303		
Saturazione (%):		19.5-42.5		
SAA (µg/ml):	186	0.1-0.5		

Romeo, 1 year

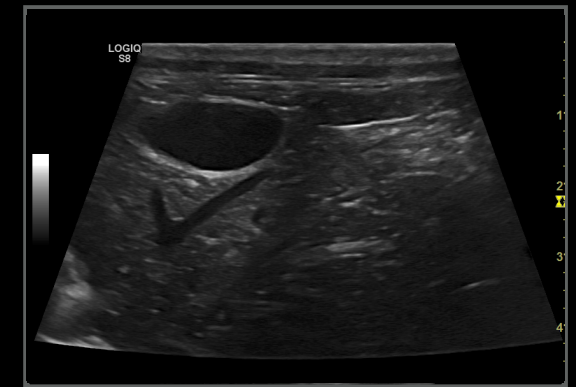
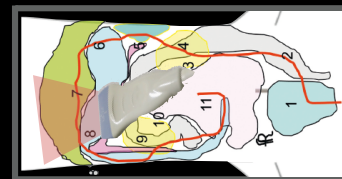
Severe systemic inflammation

FIV and FELV: -

Abdominal ultrasound

Romeo, MN, 1 year


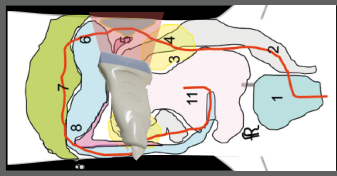

Probe position in a different patient



8-7


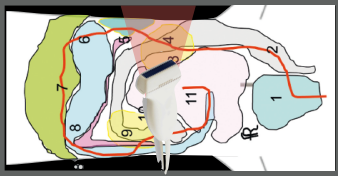

Romeo, MN, 1 year

Probe position in a different patient 5

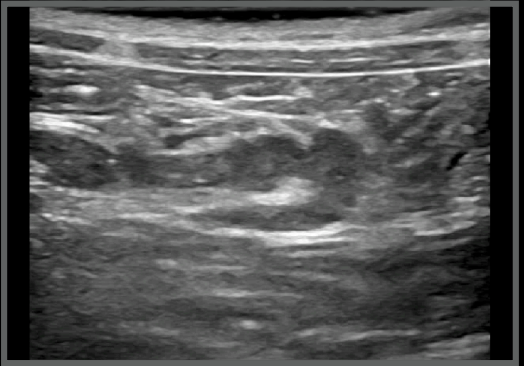
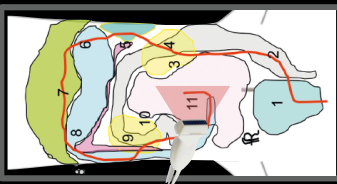
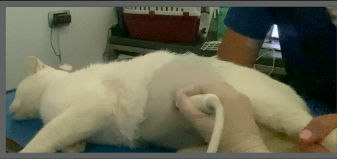
Romeo, MN, 1 year

Probe position in a different patient 4 long

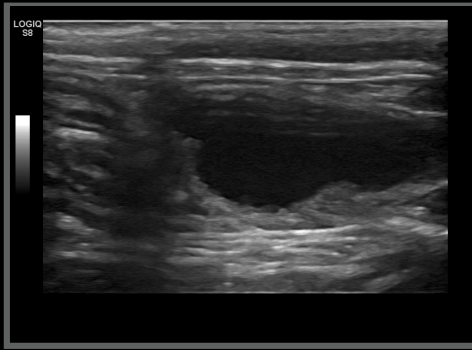
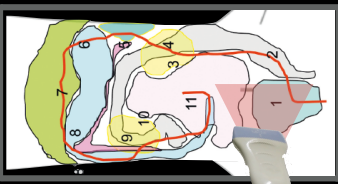

Romeo, MN, 1 year

Probe position in a different patient 11

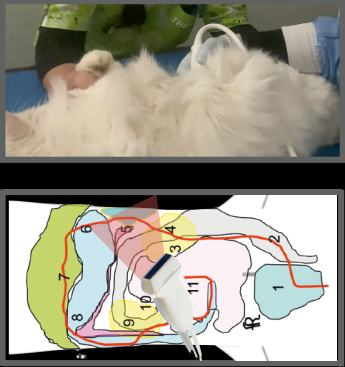
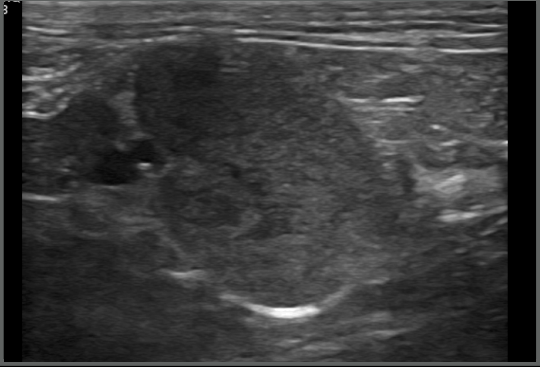
Romeo, MN, 1 year

Probe position in a different patient 11-1

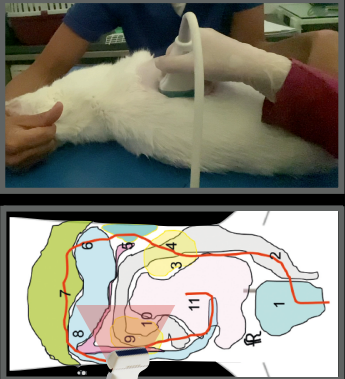
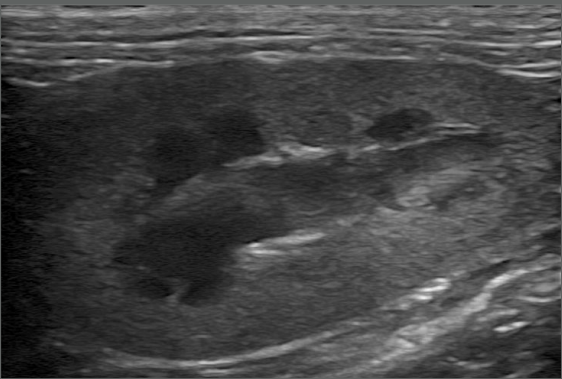
Romeo, MN, 1 year

Probe position in a different patient 10-11

Romeo, MN, 1 year

Probe position in a different patient 9

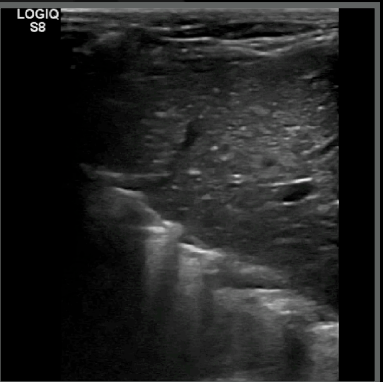
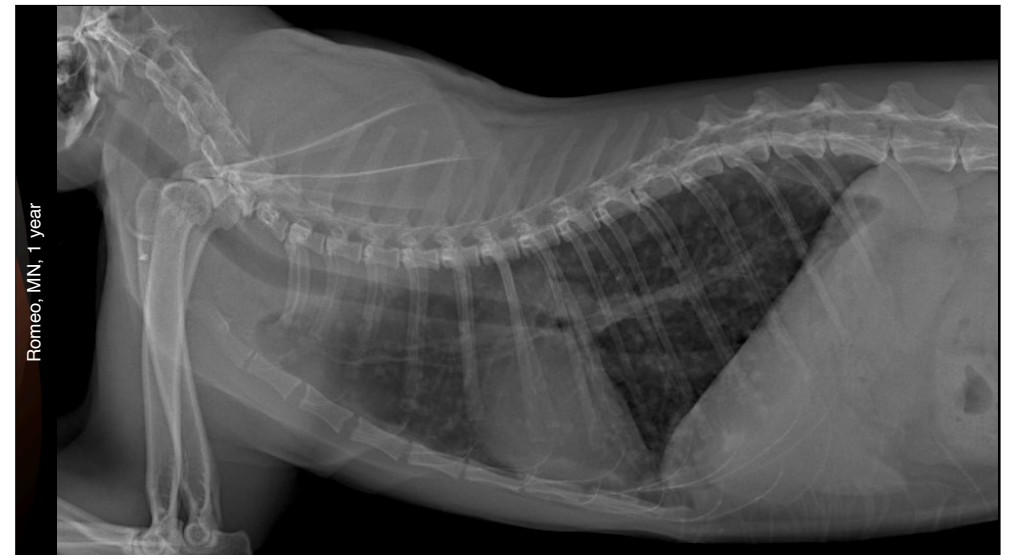



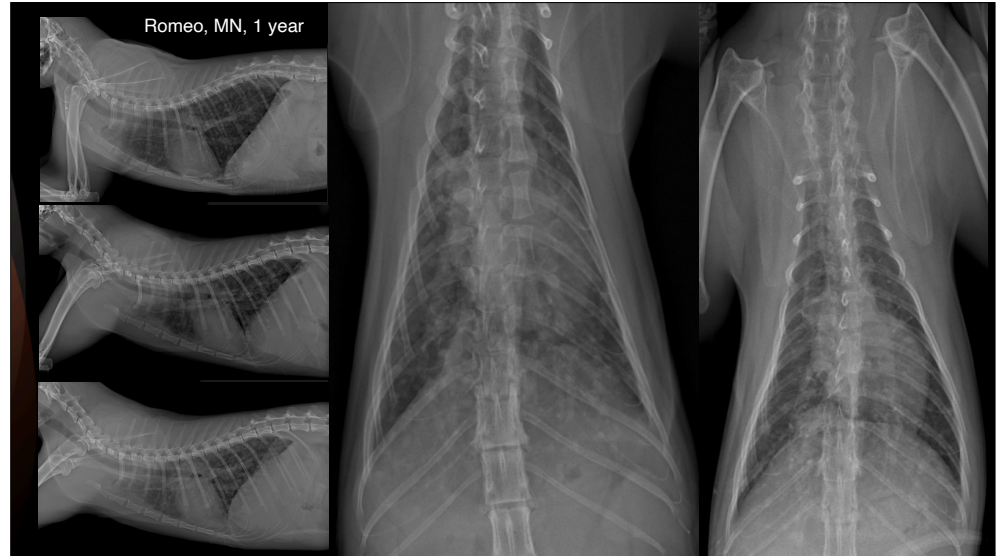
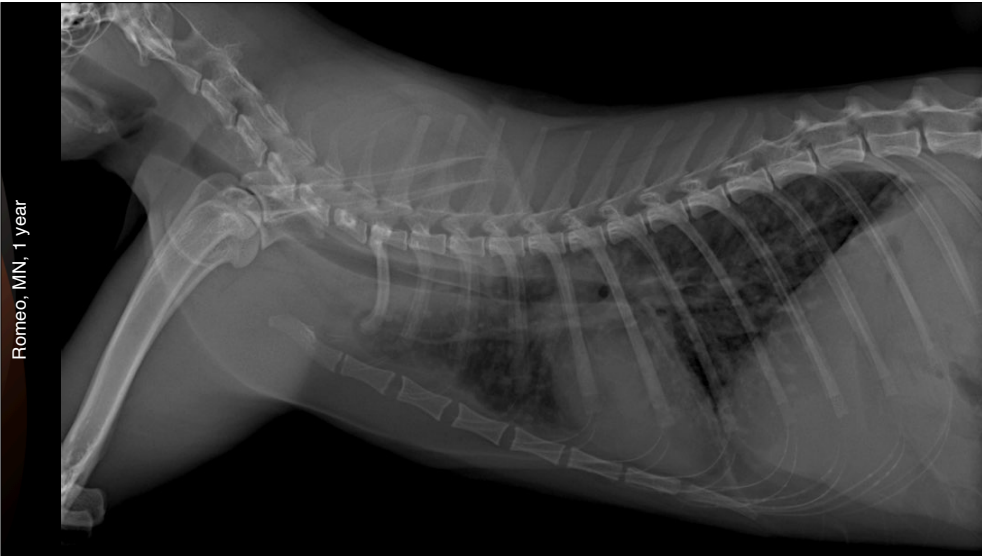
Romeo, DSH, MN, 1 year

Ultrasonographic diagnoses:

- Splenic nodular lesion
- Mesenteric mass:
 - lymph node or pancreas
- Chronic enteropathy
- Interrupted mirror artefact in the thoracic outline

What next?



Romeo, DSH, MN, 1 year

Radiographic diagnoses:

- Peribronchial / military interstitial pattern
- Metastasis/carcinomatosis
- Granulomas (FIP)
- Eosinophilic granulomas
- Severe chronic lower airways disease

• Otherwise unremarkable thorax

What next?

Romeo, MN, 1 year

Probe position in a different patient

LOGIQ S8

10-11

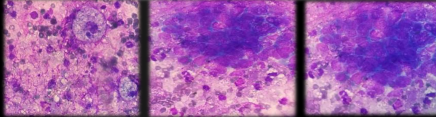
Romeo, DSH, MN, 1 year

- Splenic FNA: not diagnostic
- Abdominal mass FNA: neutrophilic granuloma?
- FNA lung nodule: not diagnostic

Referto:

Descrizione : in tutti i preparati si evidenzia un quadro sovrapponibile. Si evidenzia una moderata componente ematica di fondo, numerosi polimorfonucleati neutrofili con segni di degenerazione nucleare (carolisi/carioressi), numerosi elementi macrofagici. Presenti piccoli cluster dai contorni mal definiti nucleo rotondo in posizione centrale citoplasma cromatina fine perinucleare basofilo. Non si evidenziano agenti eziologici liberi e/ofagocitati.

Conclusioni : **compatibile con processo neutrofilico/macrofagico**. Sono necessari approfondimenti diagnostici volti a capire l'agente eziologico all'origine del processo stesso.



What next?

Romeo, DSH, MN, 1 year

- Electrophoresis and FNA LNs and "abdominal mass" for PCR coronavirus: negative
- Mycobacterial research: negative
- Blood culture: negative
- Lung worms PCR: negative

REFERTO DI BIOLOGIA MOLECOLARE

Ricerca:	Eseguita su:	Metodica:	Limite:	Esito:
Aelurostrongylus abstrusus	Sangue intero	Nested PCR	100 copie di genoma del parassita	NEGATIVO

ESAME CULTURALE

Esame richiesto:	Esami culturali per aerobi e anaerobi (NO TAMPONI solo su eSwab o bottiglia da emocoltura forniti dal Laboratorio)
Campione:	Linfonodo
Conta dei germi:	NESSUNO SVILUPPO

La colorazione Ziehl Neelsen condotta sul campione, è risultata negativa per la dimostrazione di batteri acido resistenti in sede di lesione.

Considerare ulteriori approfondimenti di biologia molecolare o biotipici istopatologici.

Romeo, DSH, MN, 1 year

One month later

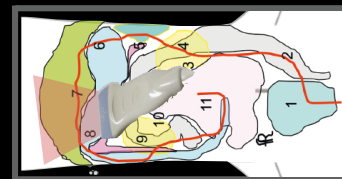
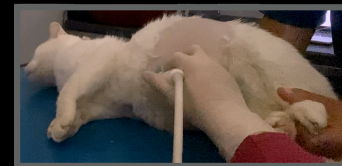
- Losing weight
- Poor appetite
- Lethargic
- Stable blood works



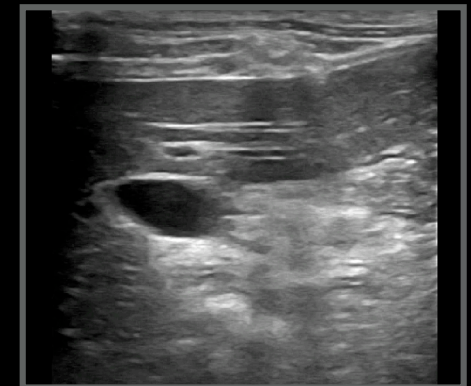
Romeo, MN, 1 year

One month later

Probe position in a different patient



8-7-10



Romeo, MN, 1 year
One month later

Probe position in a different patient

5

LOGIQ S8

7
-7
cm/s

80
60
40
20
-20
cm/s

Romeo, MN, 1 year
One month later

Probe position in a different patient

4 long

LOGIQ S8

Romeo, MN, 1 year
One month later

Probe position in a different patient

9

LOGIQ S8

Romeo, DSH, MN, 1 year

Ultrasonographic diagnoses:

- Worsening splenic mass
- Worsening mesenteric mass: -lymph node or pancreas
- Mesenteric lymphomegaly
- Bilateral renal infarcts

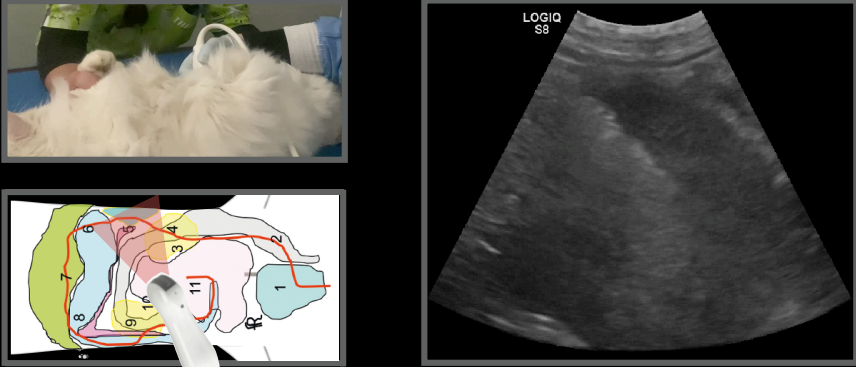
What next?

Romeo, MN, 1 year

One month later

Probe position in a different patient

10-11



Romeo, DSH, MN, 1 year

- Splenic FNA
- Abdominal mass FNA
- Abdominal lymph node FNA
- FNA lung nodule

What next?

Linfonodo e Milza: I campionamenti di entrambe le sedi presentano aspetti citologici sovrapponibili. Campioni con materiale proteinaceo e detrito cellulare di fondo. Buona cellularità con popolazione cellulare mista. Popolazione cellulare prevalente costituita da granulociti neutrofili in cariolisi e carioressi in apparente assenza di fagocitosi batterica, sono poi presenti macrofagi granulari. Sono inoltre presenti gruppi di cellule lievemente pleomorfe di forma da ovale a angolata, con basso rapporto nucleo citoplasmatico, nucleo centrale con anisocariosi di grado lieve, il citoplasma è chiaro.
 Commento: in entrambi i campionamenti il reperto citologico è in massima parte dominato da flogosi granulocitaria neutrofila e macrofagica, tuttavia la presenza di sporadici gruppi di cellule coesive non permette di definire con certezza una diagnosi. Infatti, tale aspetto, se da un lato potrebbe riferirsi ad intensa reattività mesoteliale superficiale alle lesioni, dall'altro non esclude completamente la presenza di nodi epiteliali. In questo senso si rimanda all'esame istologico al fine di definire la patogenesi di quanto descritto.
 Polmone: campioni con materiale proteinaceo di fondo, di moderata cellularità. Popolazione cellulare mista con prevalenza di granulociti neutrofili in cariolisi in assenza di fagocitosi batterica, sono inoltre presenti macrofagi schiumosi e rari linfociti.
 Commento: quadro citologico di flogosi granulocitaria neutrofila e macrofagica aspecifica.

Romeo, DSH, MN, 1 year

- Surgically performed splenectomy and multiple biopsies
- Euthanised two weeks later for worsening conditions


A. Milza e pancreas. È presente una neof ormazione irregolarmente nodulare moderatamente cellulare gravemente infiltrante, scarsamente demarcata e non capsulata, che origina dal pancreas esocrino continuandosi ad invadere il tessuto adiposo peritoneale fino a raggiungere, senza invaderla, la capsula della milza. La neof ormazione è organizzata in tubuli immersi in stroma reattivo (desmoplasia). Le cellule neoplastiche sono poligonali, di 12-16 micron di diametro, con rapporto nucleo/citoplasmatico intermedio e bordi cellulari distinti. Il citoplasma è moderato in quantità, granulare eosinofilo, con occasionali granuli eosinofilo grossolani (granuli di zimogeno). I nuclei sono da rotondeggianti a ovali, da basali a variamente disposti, con cromatina dispersa e 1-2 nucleoli. I caratteri di anisocitosi, anisocariosi e anisonucleolosi sono gravi e le mitosi variano in media da 2 a 6 per campo microscopico ad alto ingrandimento. Si osservano multifocali aree di invasione vascolare delle cellule neoplastiche (emboli). Nel contesto della neoplasia si rileva una focale area di degenerazione cistica. Multifocali aree della neoplasia (circa il 40%) sono cancellate da necrosi coagulativa ed occlusa da detrito necrotico, fibrina e materiale granulare basofilo extracellulare (mineralizzazioni). Multifocali aggregati di linfociti e plasmacellule infiltrano la neoplasia. Il parenchima splenico risulta nei limiti della norma.

B. Linfonodo. I follicoli linfoidi sono moderatamente espansi (iperplasia). I seni linfatici subcapsulari sono espansi da scarsi macrofagi emosiderofagici.

Diagnosi morfologica
 A. Pancreas. Adenocarcinoma pancreatico duttale con emboli neoplastici.
 Milza. Istologicamente nei limiti della norma
 B. Linfonodo. Moderata iperplasia linfoide

Conclusions

- Young age is not sufficient to rule out severe infiltrative conditions
- Always check the thorax interface, even during an abdominal ultrasound



Rebirth with solid roots

Thank you



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