

Cholangiocellular Carcinoma in Swiss South American Camelids: A case series

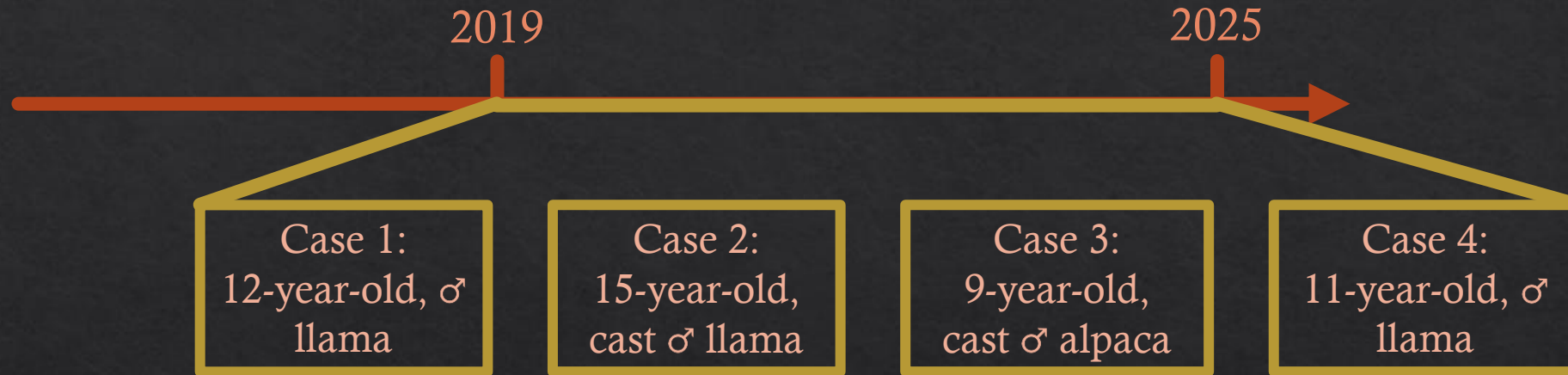
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Cases and their medical history



Medical history of all cases:

- ◇ Reduced feed intake
- ◇ Sick 2-7 days before clinic admission

Clinical Presentation

		Case 1	Case 2	Case 3	Case 4
Respiratory rate		24/min	28/min	36/min	37/min
Heart rate		60/min	76/min	88/min	100/min
Temperature		38.3°C	38.1°C	37.3°C	37.7°C
Body Condition		Reduced		Good	Emaciated
Dehydration				X	X
Heart, Respiratory & Circulatory System		- Occasional heart dysrhythmias - Bronchovesicular sounds increased dorsally and absent ventrally - Abdominal expiratory effort			- Subcutaneous oedema - Injected sclera - Serosanguineous nasal discharge left
Abdomen	General	Painful abdomen	Painful, slightly distended		Succussible abdominal fluid bilaterally
	Gastrointestinal motility		↓	↓	↓
Urinary tract				Glucose- & Bilirubinuria	

Diagnostics

		Case 1	Case 2	Case 3	Case 4
Haematology & plasma biochemistry	Total proteins	wnl	↓	↑	wnl
	Albumin	↓	↓	wnl	-
	Globulines	↓	↓	↑	-
	Urea	wnl	wnl	wnl	-
	Creatinine	↑	↑	↑	-
	GLDH	wnl	↑	↑	-
	GGT	↑	↑	↑	-
	Bilirubin	wnl	wnl	↑	-
	Potassium	wnl	↓	↓	↓

Diagnostics

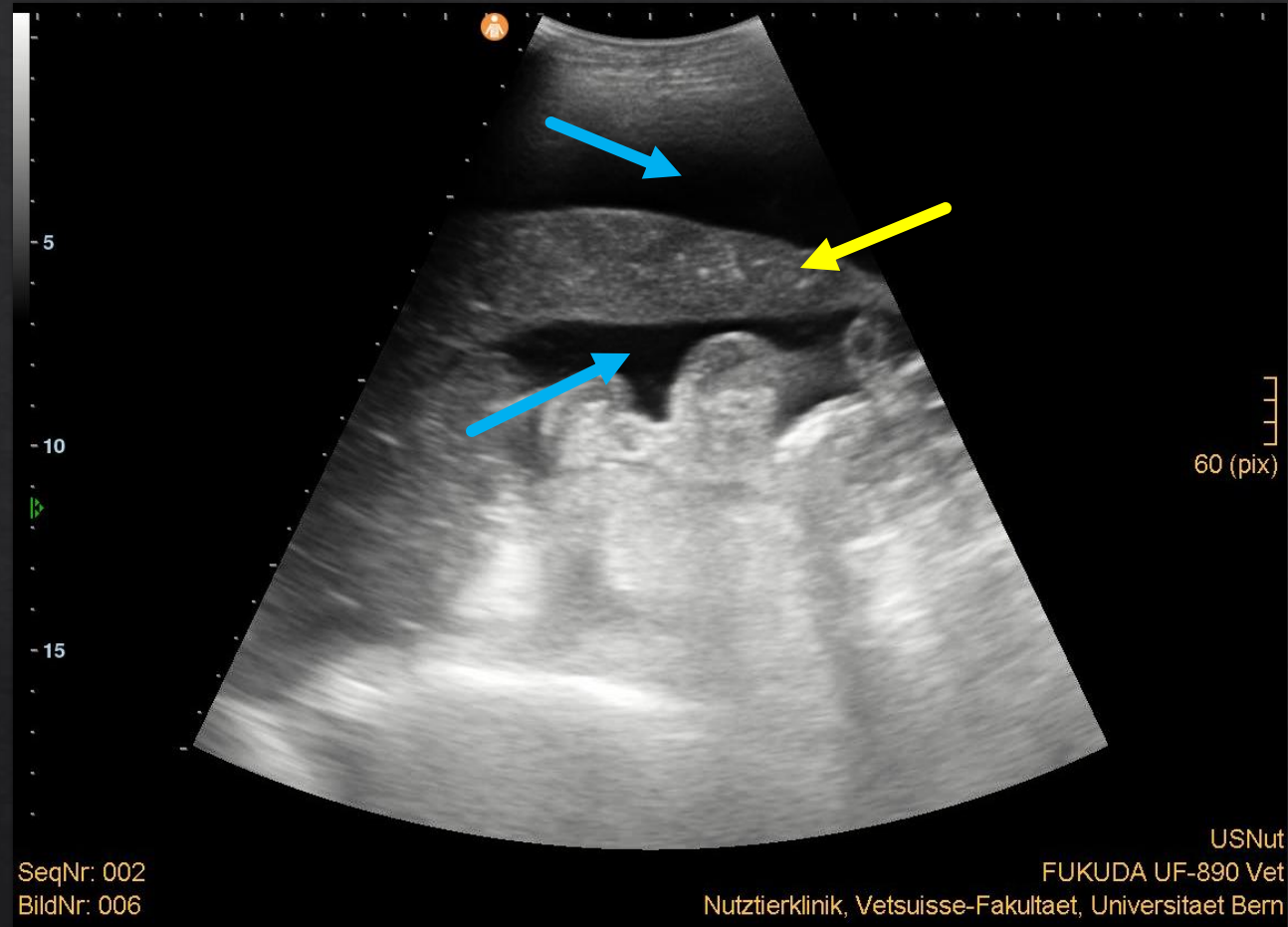
Parasitology	Case 1	Case 2	Case 3	Case 4
<i>N. battus</i>	x		x	x
<i>Nematodirus</i> sp.	x			x
<i>Trichuris</i> sp.	x		x	x
Gastrointestinal strongyles	x	x	x	x
<i>Capillaria</i> sp.				x
<i>Eimeria punoensis</i>		x		x
<i>Eimeria alpaca</i>			x	x
<i>Dicrocoelium dendriticum</i>	x	x*	x	x
<i>Eimeria macusaniensis</i>				x
MacMaster (EpG)	50	2150	400	

*found in Pathological examination

Diagnostics

Ultrasound		Case 1	Case 2	Case 3	Case 4
Abdominal effusion		Severe	Severe	Moderate	Severe
Pleural effusion		Severe	-	None	Moderate
Liver	Size (subjective)	↓	-	-	↑
	Parenchyma	Multiple hyperechogenic spots + cloudy structure	Hyperechogenic bile ducts	Homogenous	Multiple hyperechogenic spots

Ultrasonography



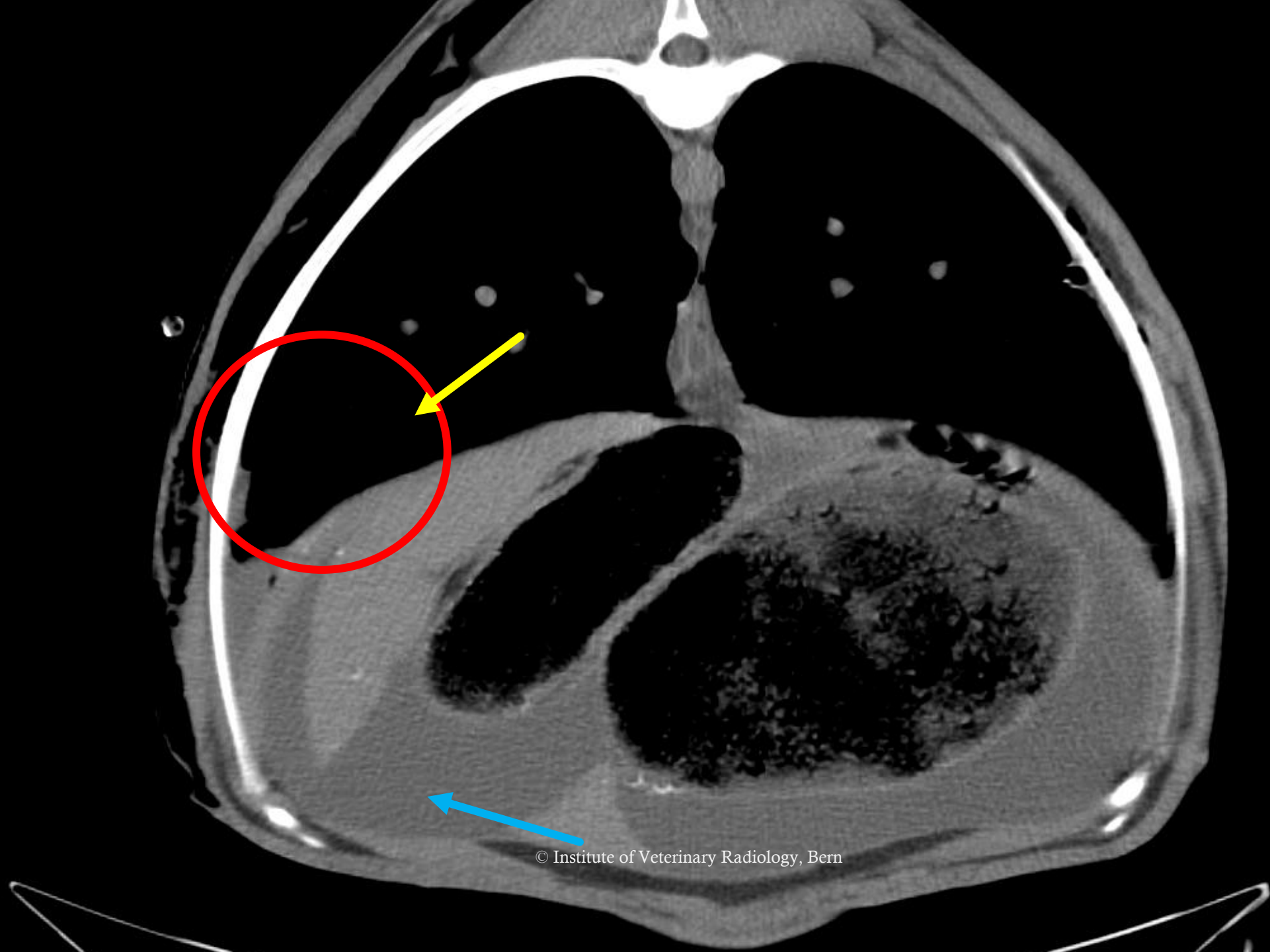
Differential Diagnosis

- ◇ Abdominal distention / Effusion
 - ◇ Ascites
 - ◇ Hypoproteinaemia
 - ◇ Parasite infestation
 - ◇ Renal failure
 - ◇ Liver failure
 - ◇ Heart failure
 - ◇ Peritonitis
 - ◇ Uroabdomen
 - ◇ Haemoabdomen
 - ◇ Tumours

Diagnostics



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Diagnostics

Peritoneal fluid analysis	Case 1	Case 2	Case 3	Case 4
Protein-rich transudate	X	X	-	-
Suspected neoplastic cells	X	X	-	-

Case 1

- ❖ Pleural fluid analysis: Protein-rich transudate with marked macrophagic activation & atypical cells
- ❖ Liver biopsy: Cholangiocellular carcinoma & chronic cholangiohepatitis with *D. dendriticum* egg

Outcome



Image generated by ChatGPT (OpenAI), 2025.

Post-mortem Examination

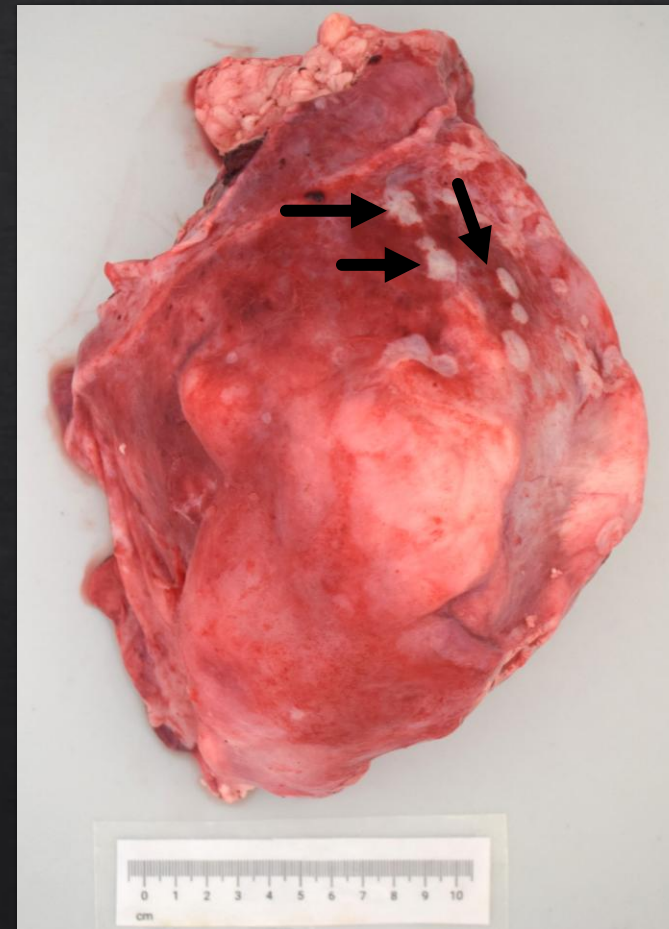
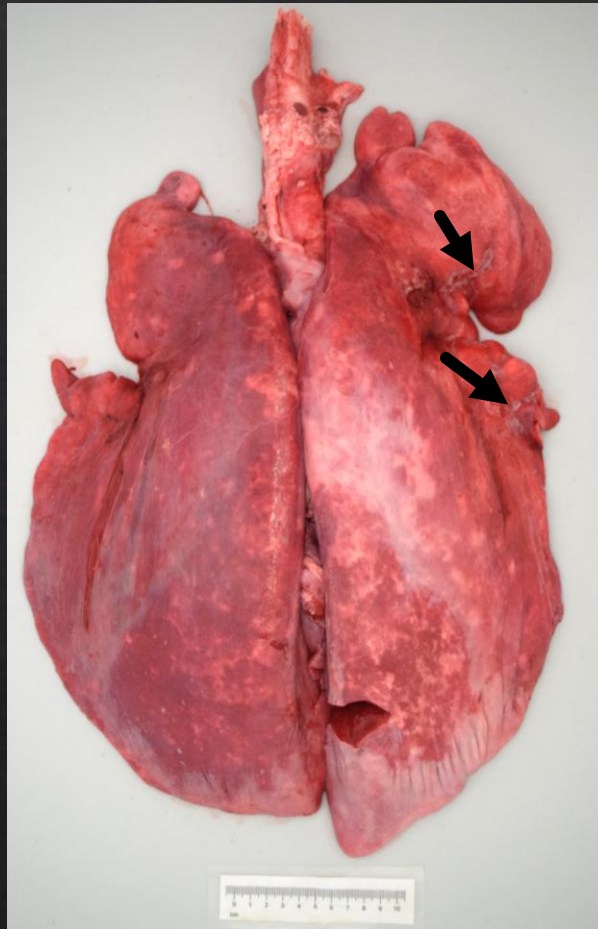
Pathological findings

		Case 1	Case 2	Case 3	Case 4
	Pleural effusion	+++	++	none	++
	Abdominal effusion	+++	+++	++	+++
Liver lesions	Cholangiocellular Carcinoma	X	X	X	X
	Other lesions	Massive bile duct hyperplasia with moderate fibrosis and intraluminal <i>D. dendriticum</i> eggs	Moderate infestation with <i>D. dendriticum</i>	Massive diffuse hepatolipidosis	- Massive acute necrotic hepatitis with intralesional bacteria - Moderate chronic fibrotic cholangitis
Metastases	Lungs	X	X	X	X
	Diaphragm	X	X		
	Mediastinum & Pericardium	X			
	Spleen	X			
	Mesentery			X	

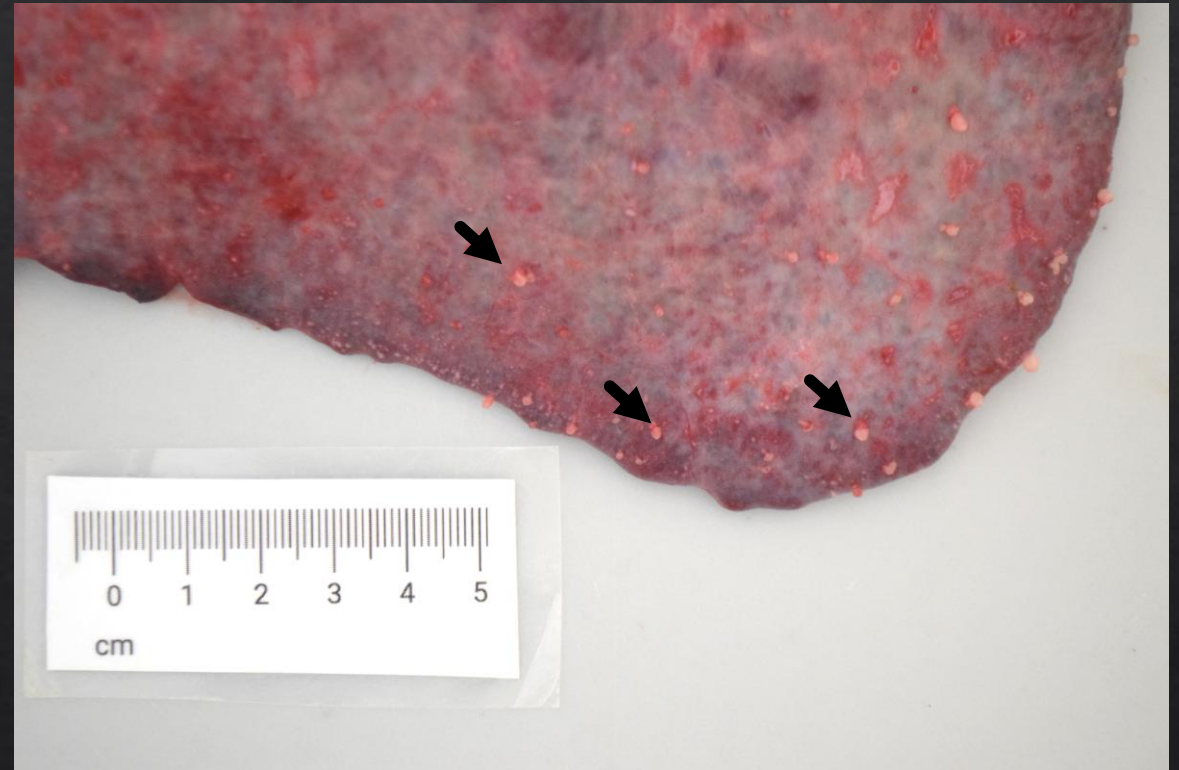
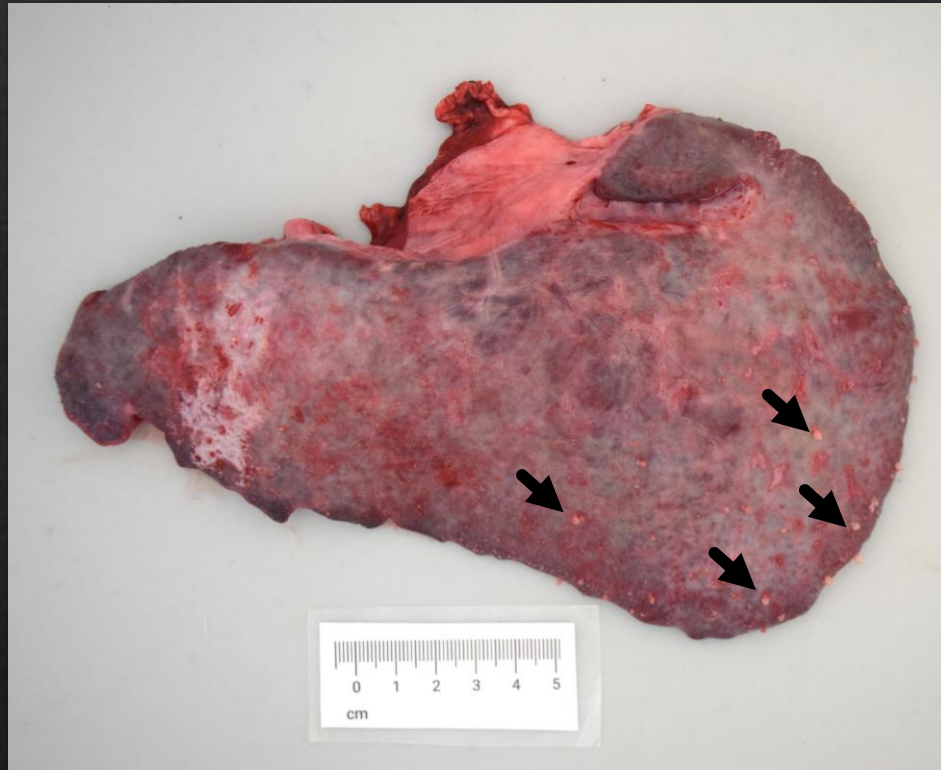
Liver



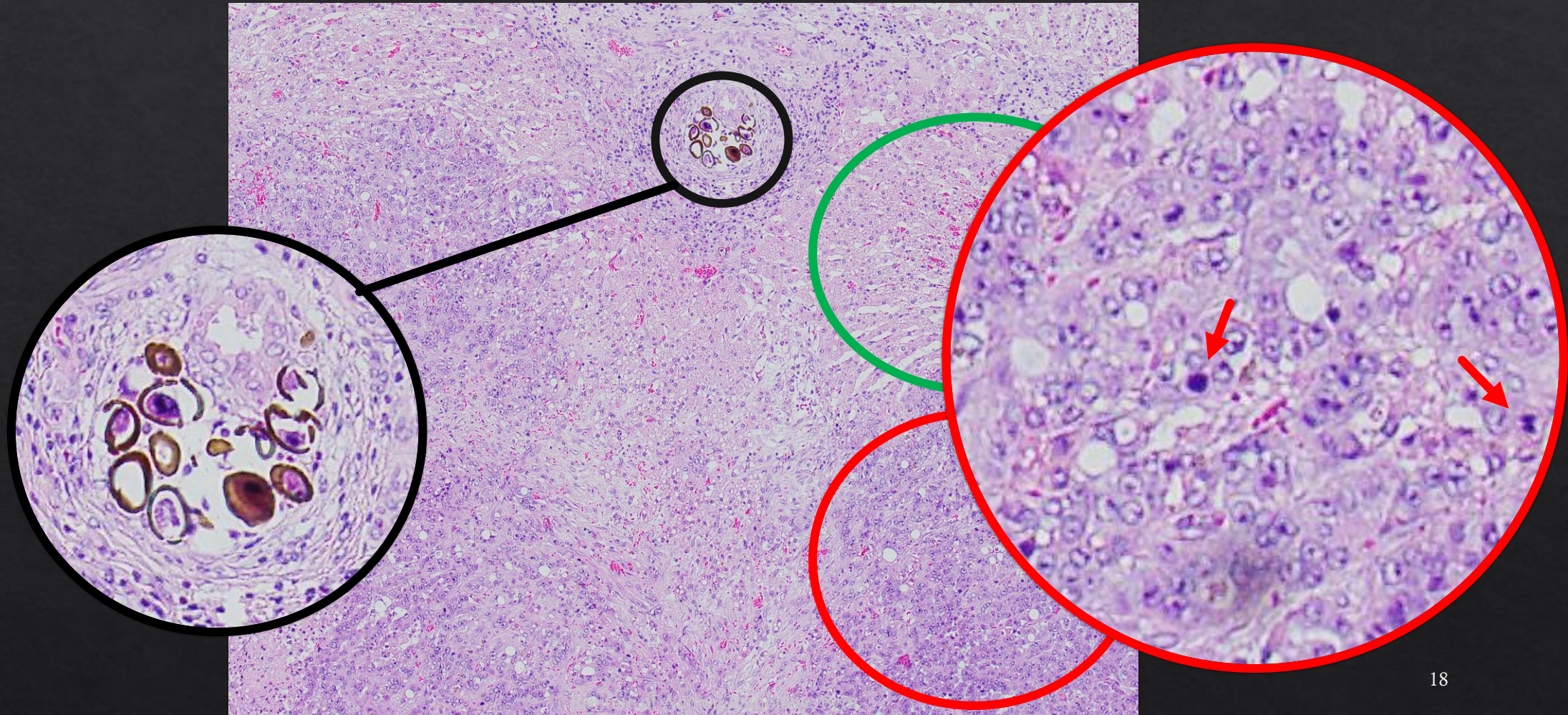
Lung & Pericard



Spleen



Histology



Take Home Messages

- ◇ Clinical presentation: Abdominal effusion in all cases
- ◇ Diagnosis:
 - ◇ Ultrasonography may help with detecting effusion
 - ◇ Liver biopsy can provide a definitive diagnosis
- ◇ Prognosis: All cases presented in late stage of the disease and had metastasis
- ◇ *D. dendriticum* was found in all cases to CCC
 - Could chronic dicrocoeliasis predispose to CCC?



Thank you!

- Congress committee
- Swiss Association for Animal Sciences
- Everyone involved in the cases
- You for your attention

Questions?



References

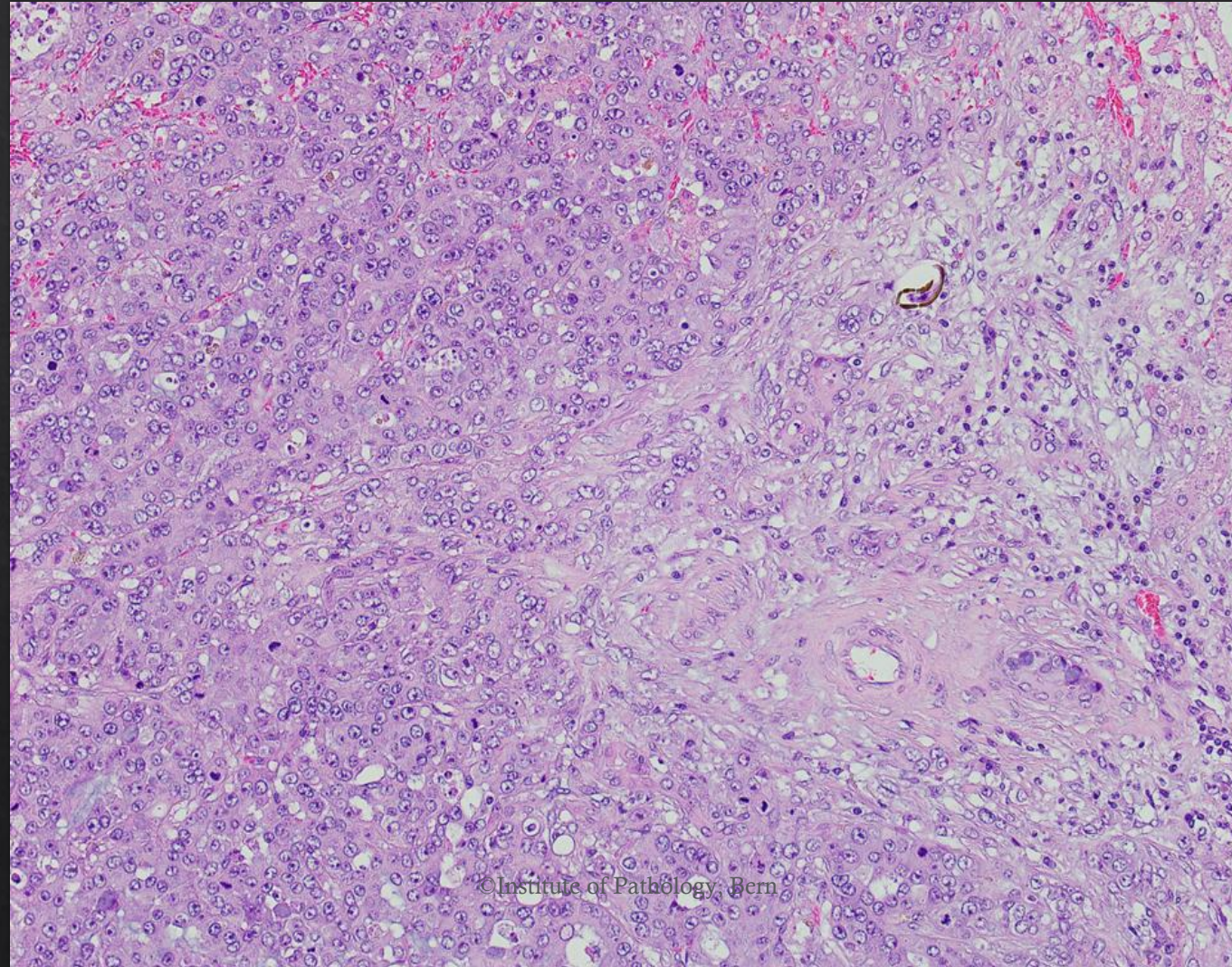
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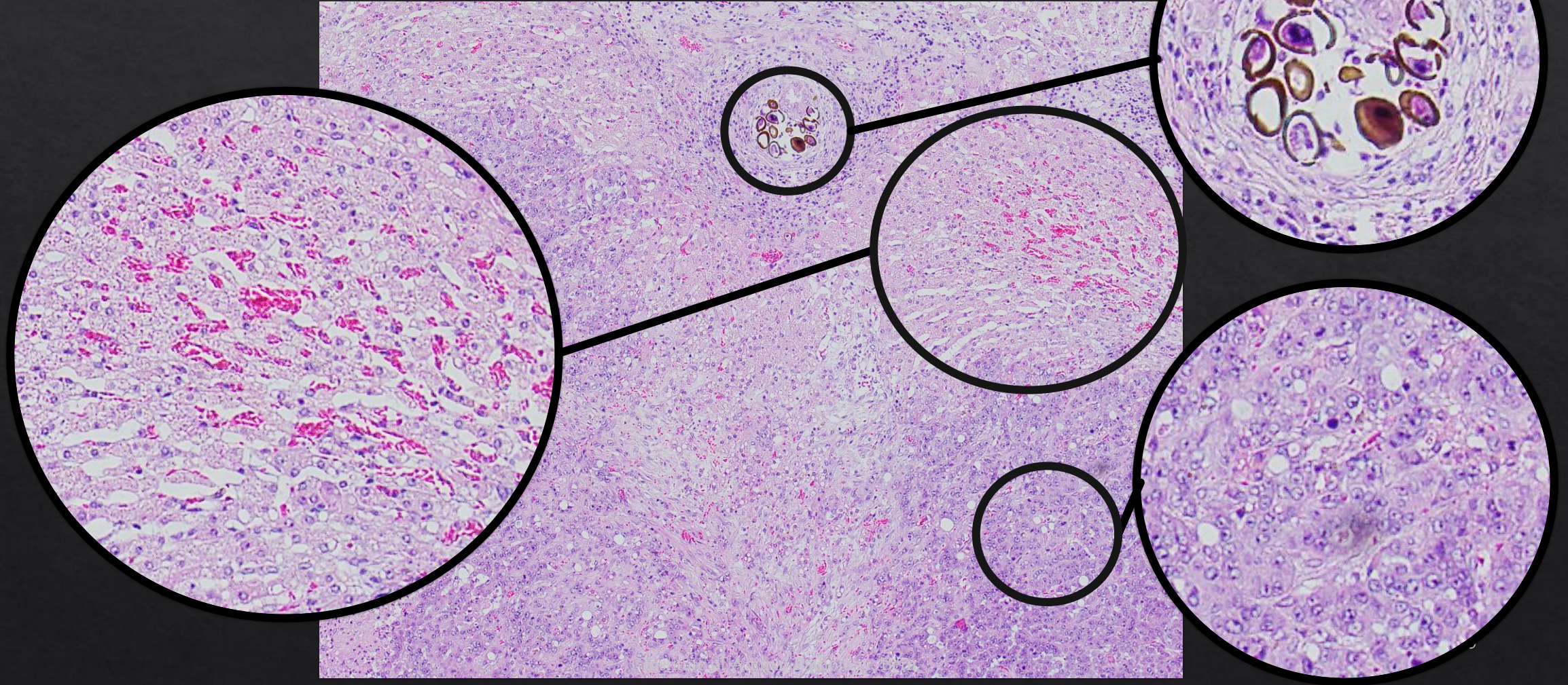
Diagnostics



Case 1 - Histology



Case 1 - Histology



Diagnostics

		Case 1	Case 2	Case 3	Case 4
Haematology & Plasma chemistry	Total protein (g/L)	wnl (54)	↓ (51)	↑ (76)	wnl (54)
	Globulins (g/L)	↓ (29)	↓ (31)	↑ (61)	-
	Urea (mmol/L)	wnl (4.2)	wnl (18)	wnl (7.2)	-
	Creatinine (μmol/l)	↑ (140)	↑ (194)	↑ (269)	-
	GLDH (U/L)	wnl (15)	↑ (488)	↑ (428)	-
	GGT (U/L)	↑ (41)	↑ (96)	↑ (1137)	-
	Bilirubin (μmol/l)	wnl (1.4)	wnl (1.4)	↑ (16.1)	-
	Potassium (mmol/L)	wnl (4.29)	↓ (2.55)	↓ (3.57)	↓ (2.83)