Cardiovascular cases

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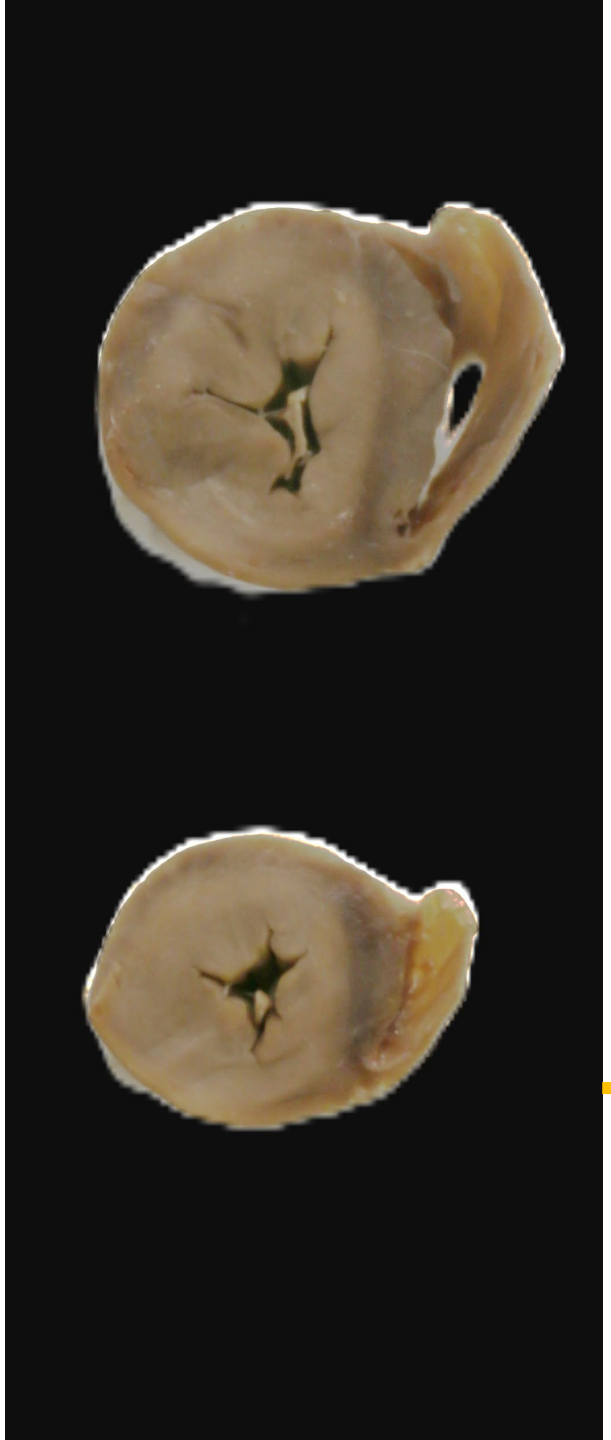
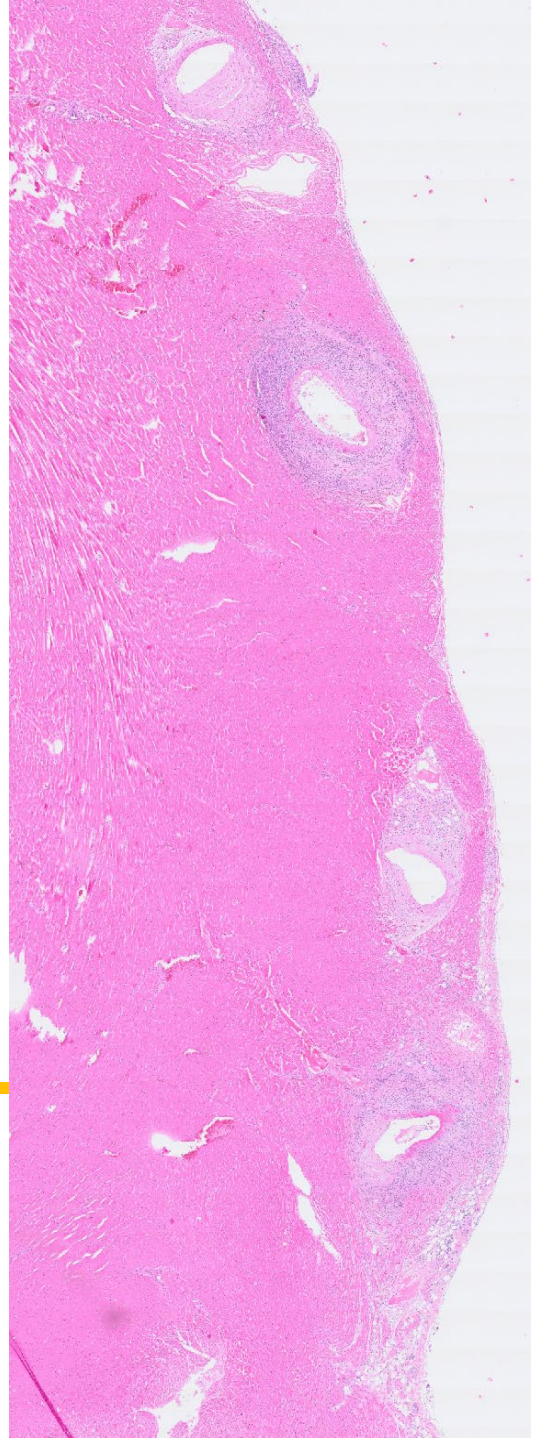
CASE 1

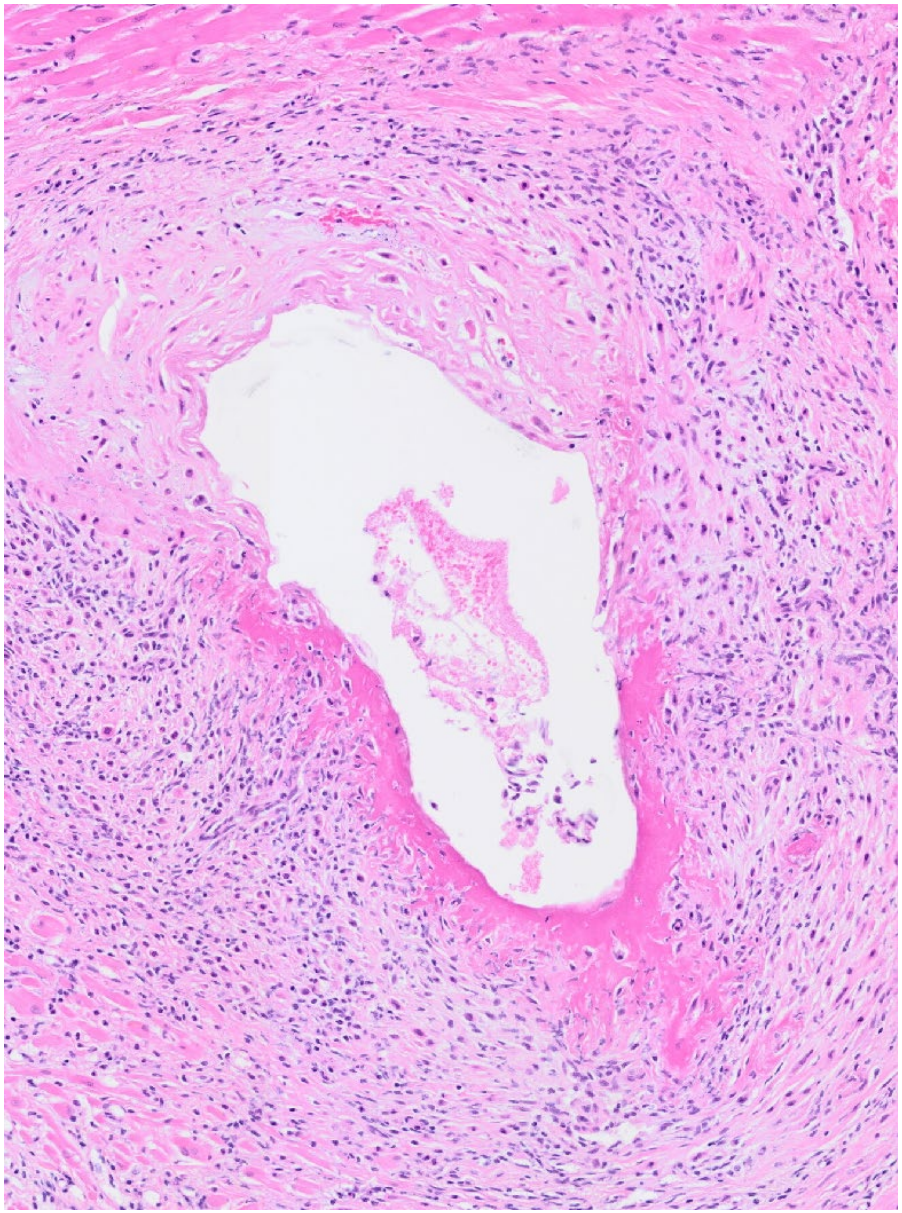
- 13-year-old, female, domestic shorthair cat
- History of seizures since 2022, non-medicated
- Weight loss and constipation
- Unilateral absent menace: intracranial mass vs primarily ocular

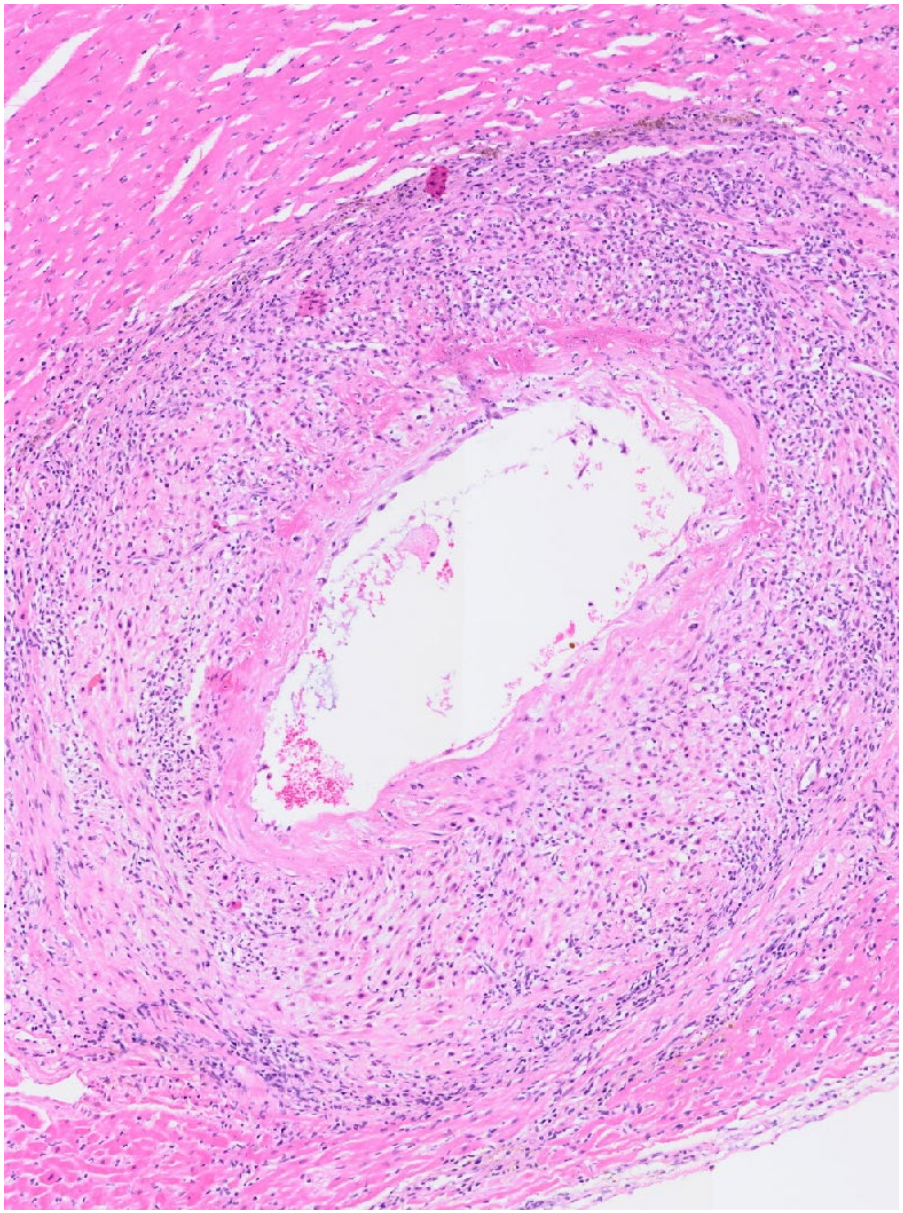
Gross findings:

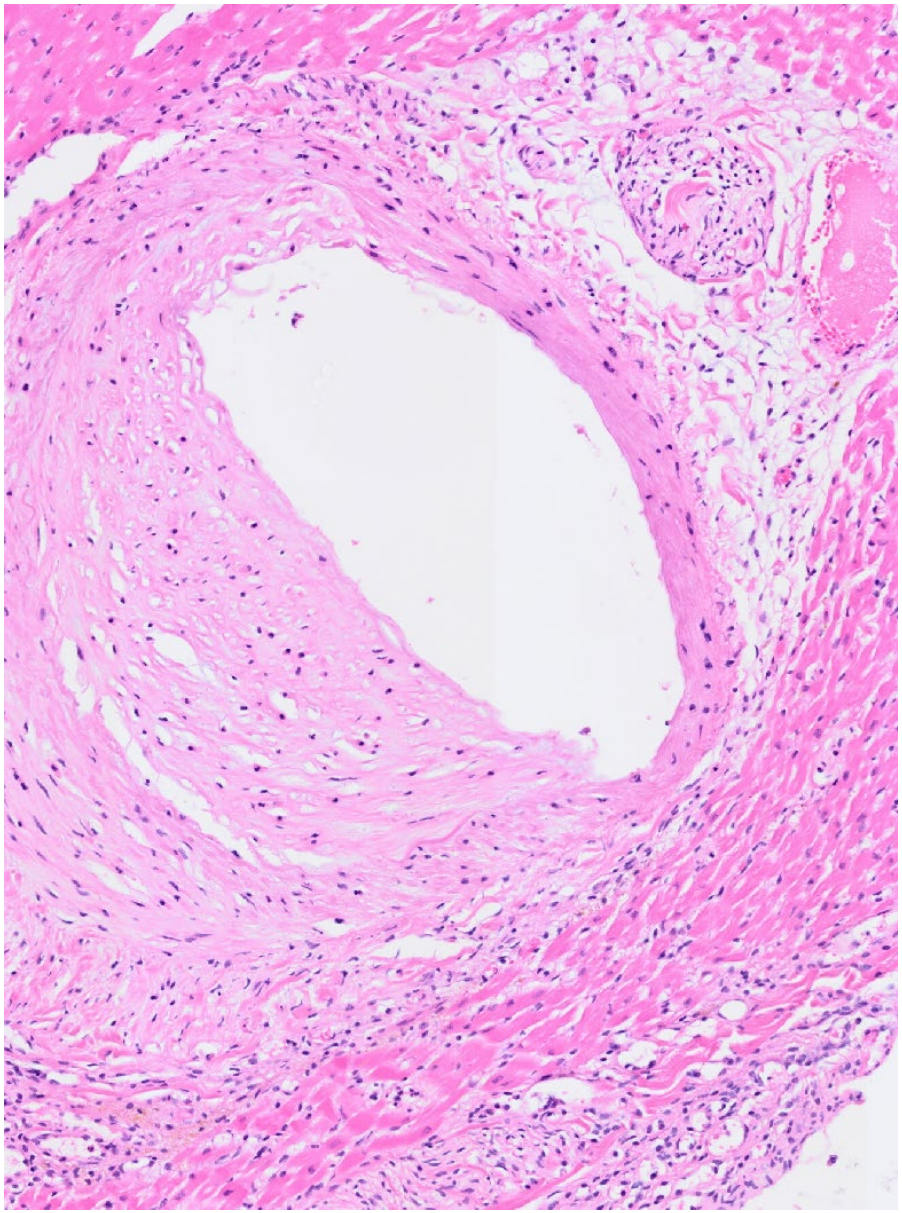
- Dilation of the colon
- Hepatic lipidosis
- Pancreatic exocrine nodular hyperplasia
- Dilation of the RV
- Dilation of the pulmonary artery

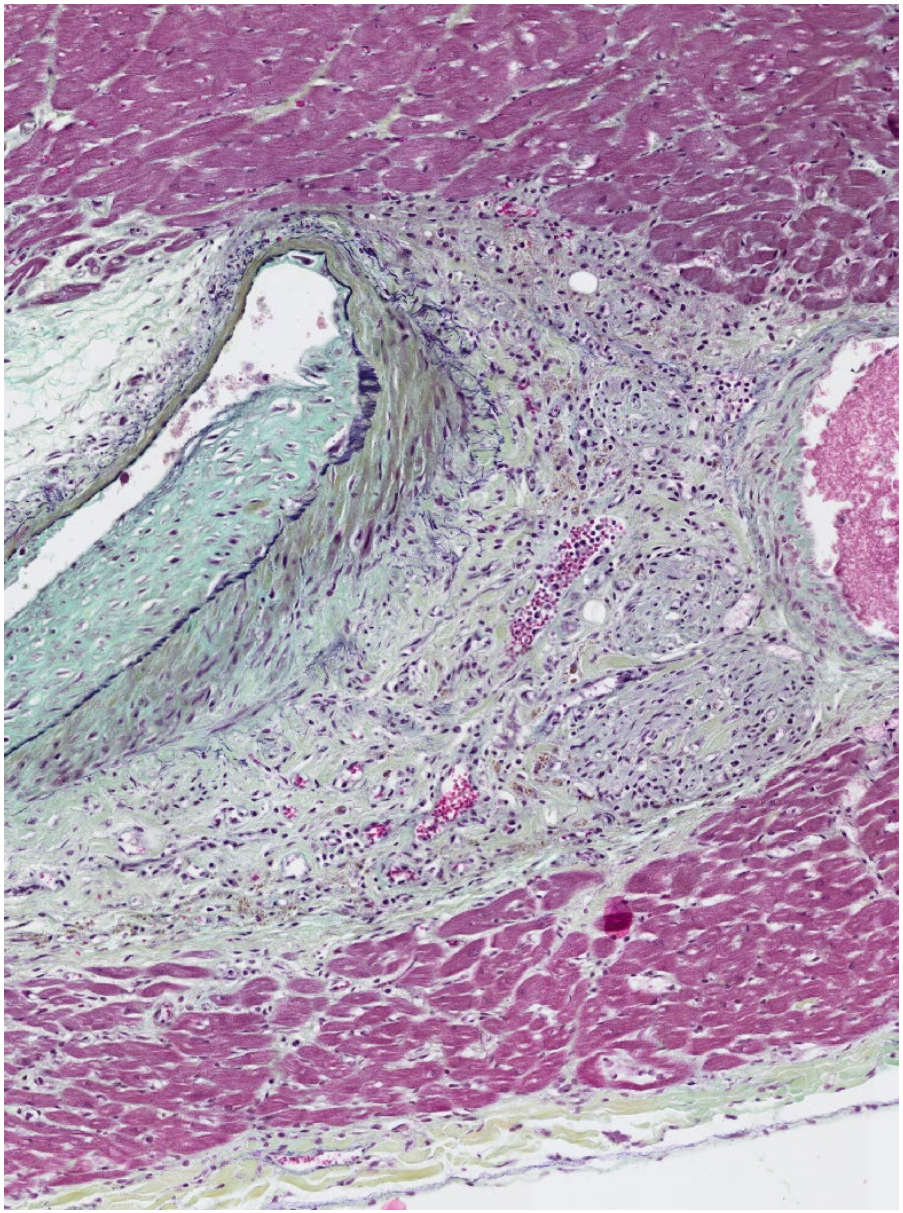


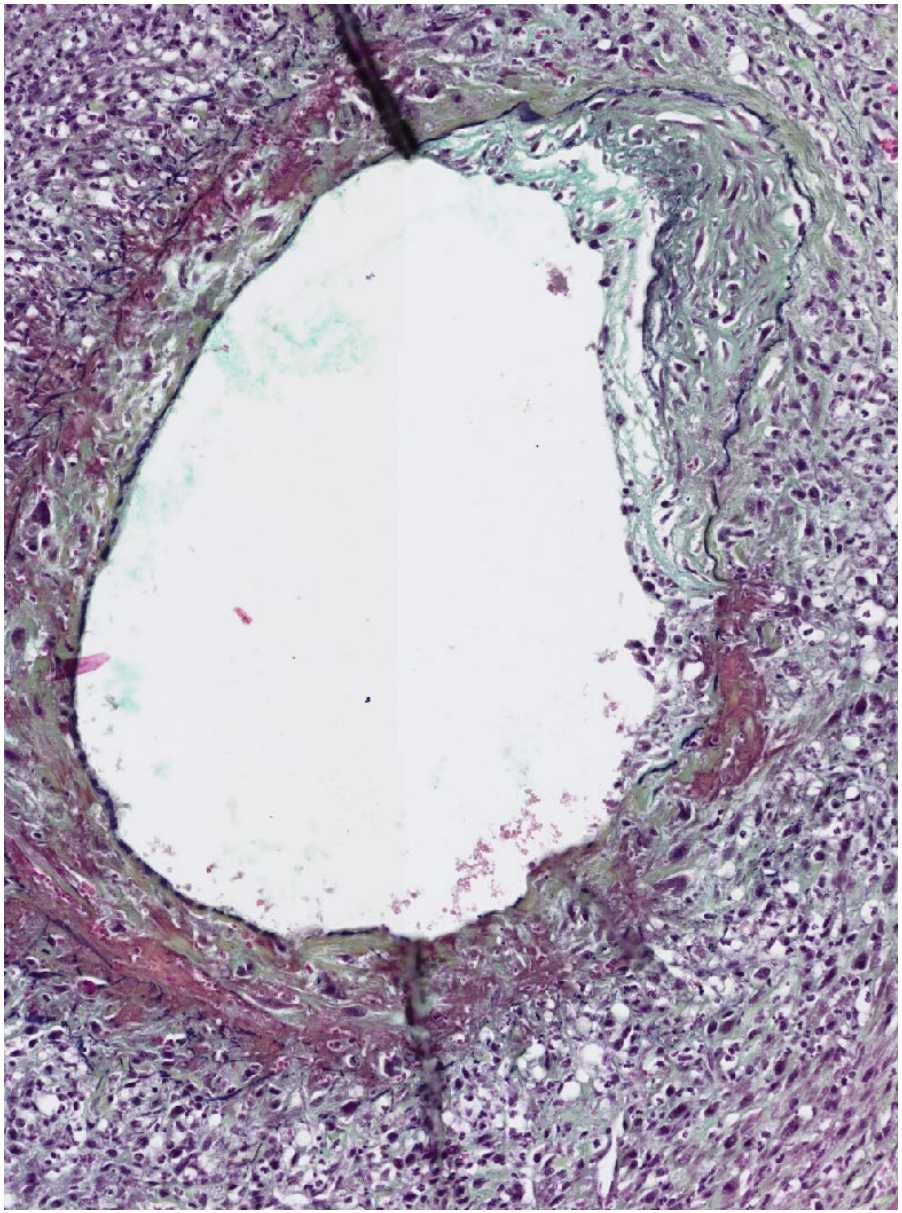


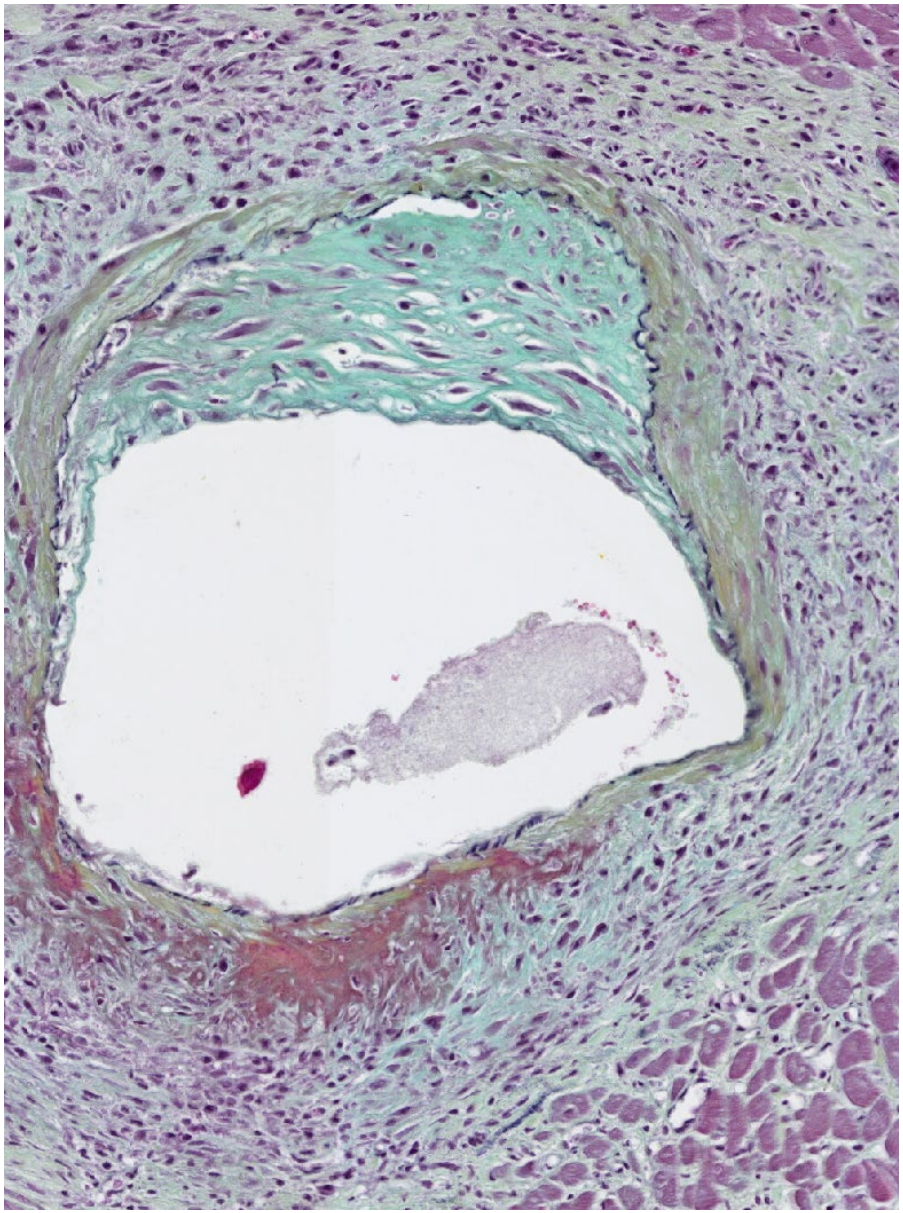












Systemic hypertension (heart, kidney, eye, cerebellum, vasa vasorum)

Coronary arteritis/periarteritis

Meningioma

Intestinal lymphoma, small-size

Subepicardial coronary arteries: intimal thickening, fibrinoid necrosis, neutrophils and a mixture of lymphocytes and macrophages within the adventitia and periadventitial tissues.

- Unknown cause
- Coronary artery vasculitis: complex condition that involves the interaction of host factors, including immune-mediated inflammation and auto-antibodies dependent processes.
- Almost all cases of coronary vasculitis appear as a manifestation of systemic (primary) vasculitis.

CASE 2

4-year-old, neutered male, Bobtail cat

- Seizures
- Progressive regenerative anemia and thrombocytopenia.
- Splenic and hepatic abnormalities were seen on ultrasound.
- Cytological evaluation was unremarkable.

Kept progressing his clinical signs despite intensive supportive treatment

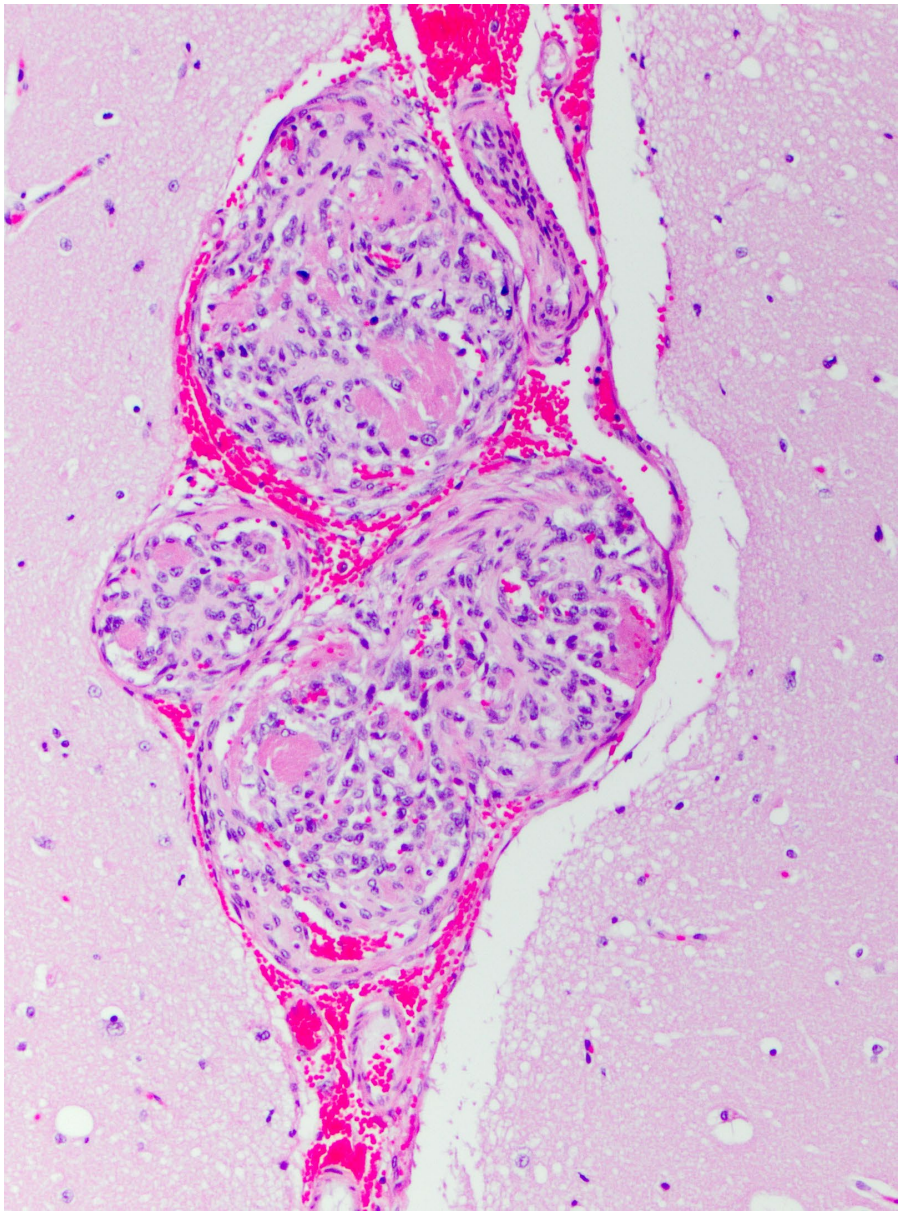
Anemia PCR panel+ELISA: Negative

SEROLOGY
TEST RESULT UNITS
FeLV Antigen by ELISA NEGATIVE
FIV Antibody by ELISA NEGATIVE

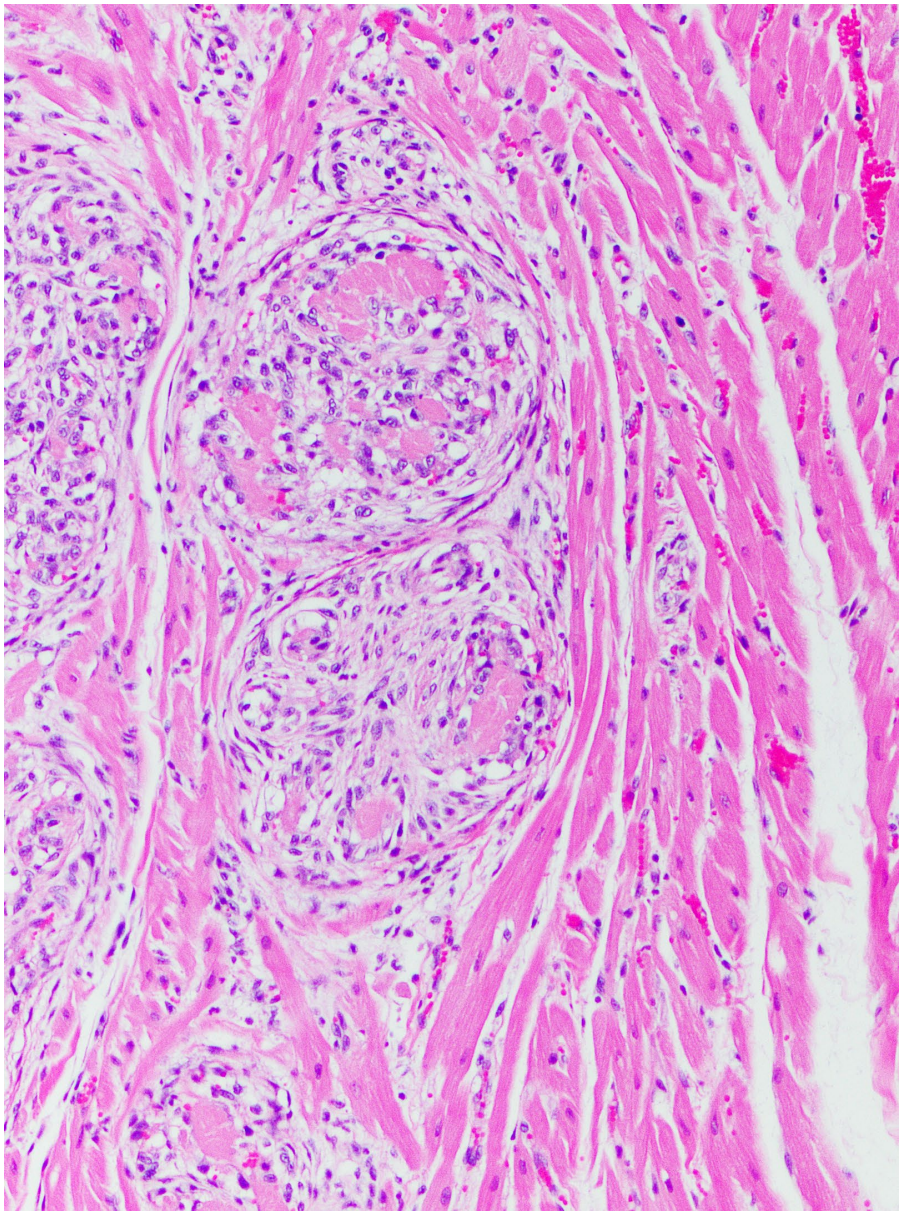
MOLECULAR DIAGNOSTICS
TEST RESULT UNITS
Cytauxzoon felis RealPCR a NEGATIVE
Bartonella spp. RealPCR NEGATIVE
Anaplasma spp. RealPCR NEGATIVE
Ehrlichia spp. RealPCR NEGATIVE
Mycoplasma haemofelis RealPCR NEGATIVE
Candidatus Mycoplasma haemominutum RealPCR NEGATIVE
Candidatus Mycoplasma turicensis RealPCR NEGATIVE
FeLV RealPCR b NEGATIVE
FIV RealPCR NEGATIVE

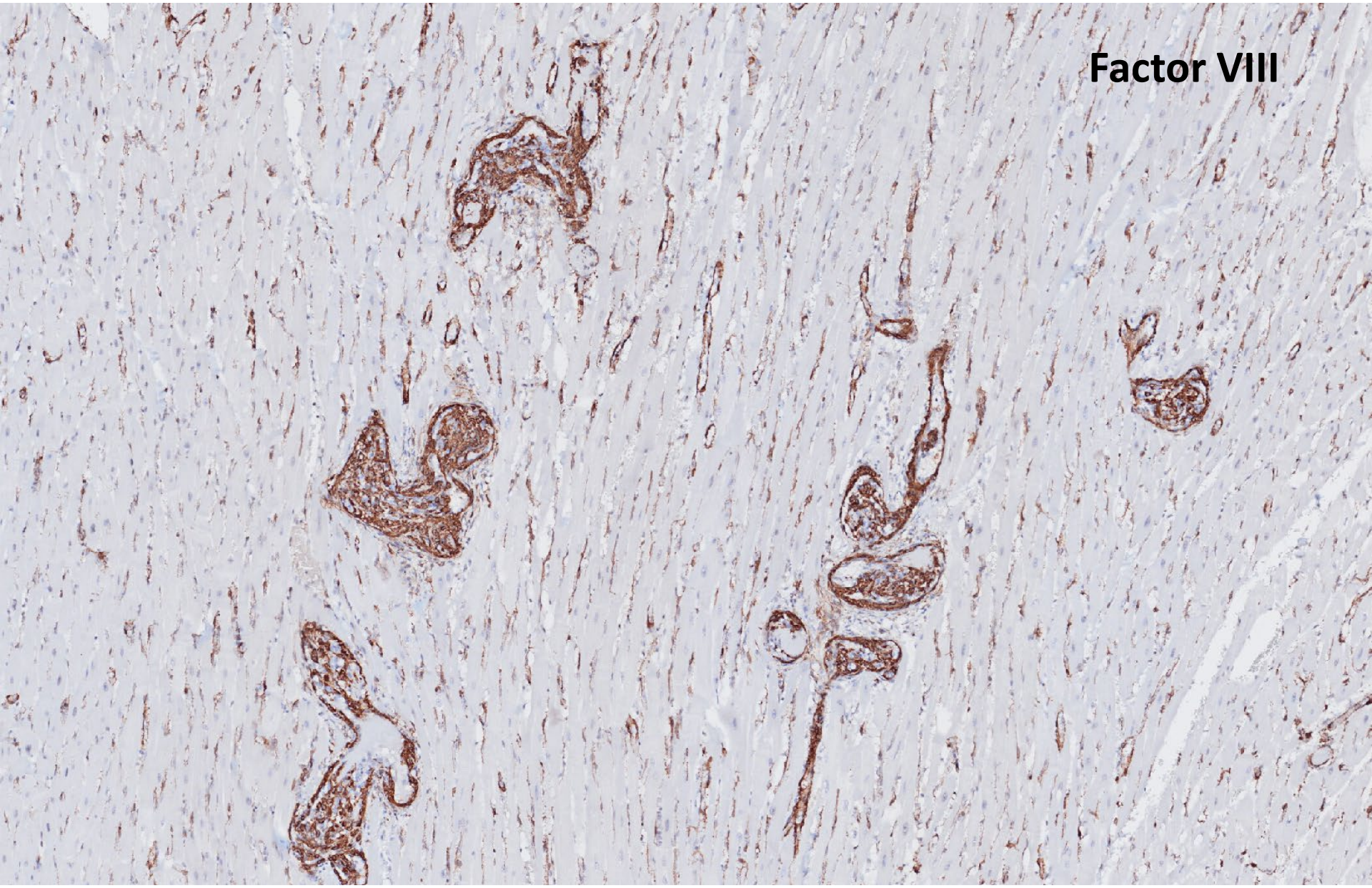
Gross findings: icterus and multifocal petechiation

Brain



Heart





Feline systemic reactive angioendotheliomatosis

Heart, small intestine, pancreas, thyroid gland, adrenal gland, kidney, liver, bone marrow, spleen, brain: Intravascular spindle cell proliferation, multifocal, marked with obstruction of vascular lumen and thrombosis

The disease is often fatal as the vasoproliferative lesions can induce thrombosis, hemorrhage, and necrosis in the affected organs, primarily the brain and heart.

In humans:

Possible association of reactive angioendotheliomatosis with underlying infection, thrombotic thrombocytopenic purpura, autoimmune disorders, hypersensitivity, cryoglobulinemia, renal and liver failure, post-liver transplantation, bone marrow transplantation-related graft versus host disease.

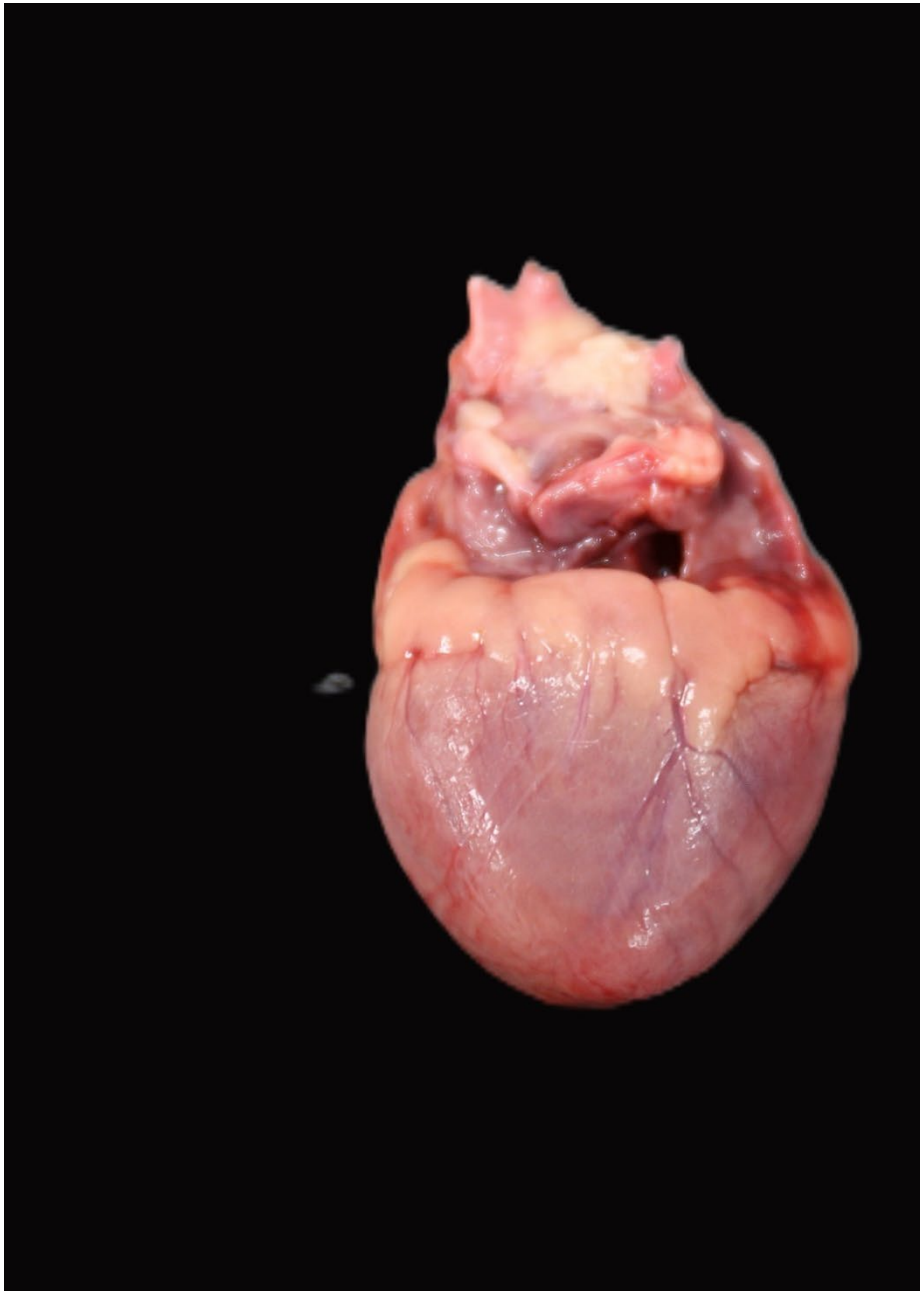
CASE 3

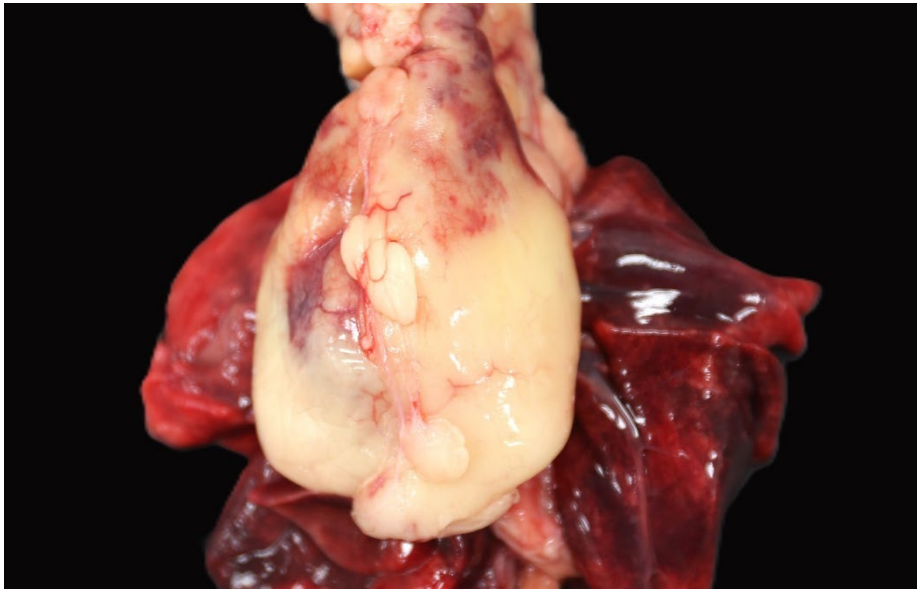
13-year-old female spayed domestic longhair cat with a BCS of 9/9

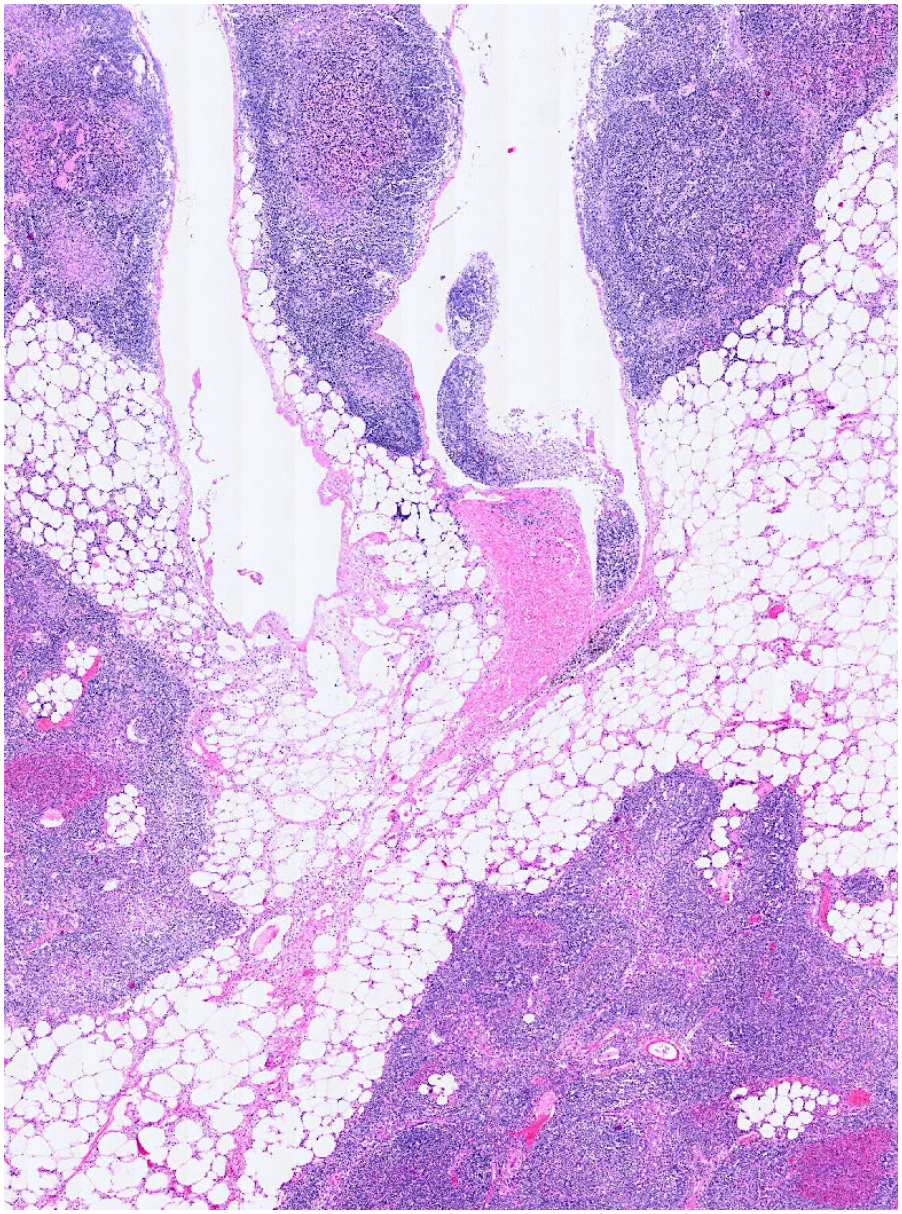
- Chronic diarrhea
- Weight loss

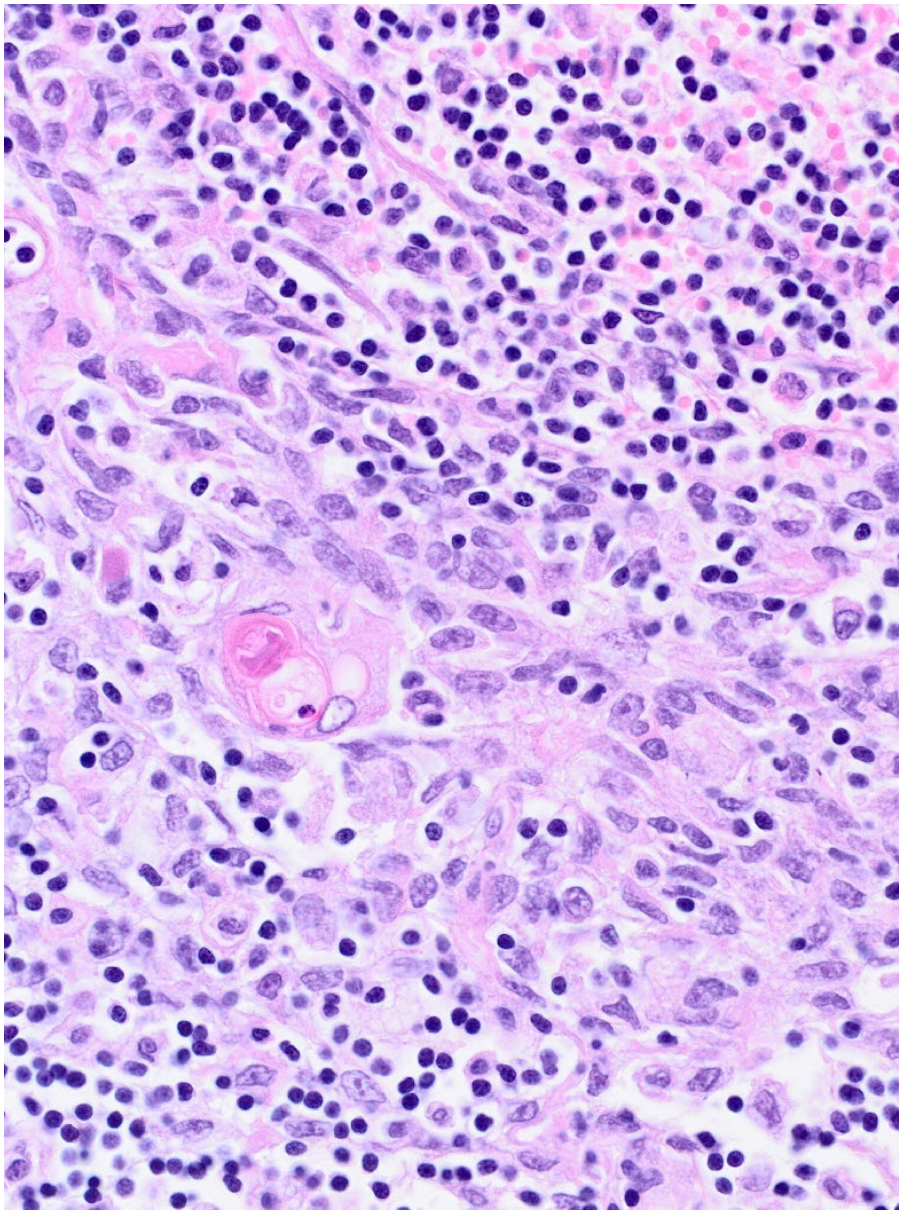
Gross findings:

- Stomach and small intestine: Lymphoma, transmural, intermediate cell
- Cystitis, lymphoplasmacytic, moderate, diffuse with extensive hemorrhages and erosions
- Portal hepatitis, lymphoplasmacytic, moderate to marked, with biliary hyperplasia and hepatocellular vacuolar change (lipid type)
- Pericardial adipose tissue: ??????????









Thymolipoma

Thymolipomas are uncommon in veterinary medicine, with only a single case reported in a cat.

Composed of a mixture of mature adipose tissue with islands of thymic tissue.

The etiology remains uncertain, with proposed hypotheses including:

- true neoplasm of the thymus
- variant of a thymoma
- hyperplasia of mediastinal fat
- neoplasm of mediastinal fat which engulfs thymic tissue

CASE 4

10-year-old spayed female domestic shorthair cat

The cat has a long history of malformations and lysosomal storage disease (as reported by the owner). The cat has always had an increased respiratory rate (due to her facial confirmation per the owner). Her abdomen has always had a slight distention to it, but today the owners report that her abdomen felt significantly more distended and possibly painful. The cat has not been wanting to eat as much over the last few days.

Gross findings:

The cat had several facial and skeletal deformities listed below:

- Widened face and rounded head
- Small ears
- Flattened nose
- Widely spaced eyes with mild protrusion of the third eyelid
- Corneal clouding
- Enlarged feet from both pelvic limbs
- The appendicular and axial skeletons were thin or flat, with increased porosity and easy to cut
- The bones of the skull were markedly thin and easy to cut
- The joints of the thoracic and pelvic limbs and costochondral and costovertebral junctions were thickened and enlarged due to bone proliferation.
- The spine of the scapula was thickened due to bone proliferation
- Widened intervertebral spaces with increased porosity in the vertebral bodies

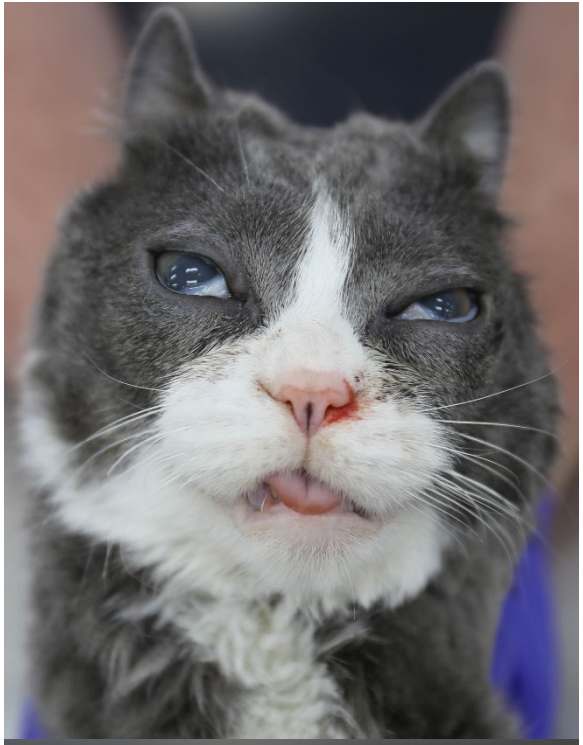
Lungs, bronchi cartilage: Cartilage/bone proliferation (presumptive), multifocal

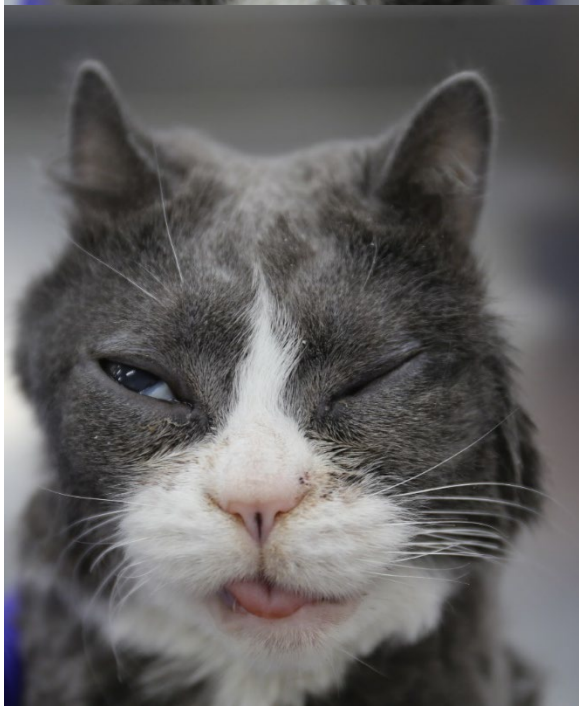
Trachea, rings: Cartilage/bone proliferation (presumptive) diffuse

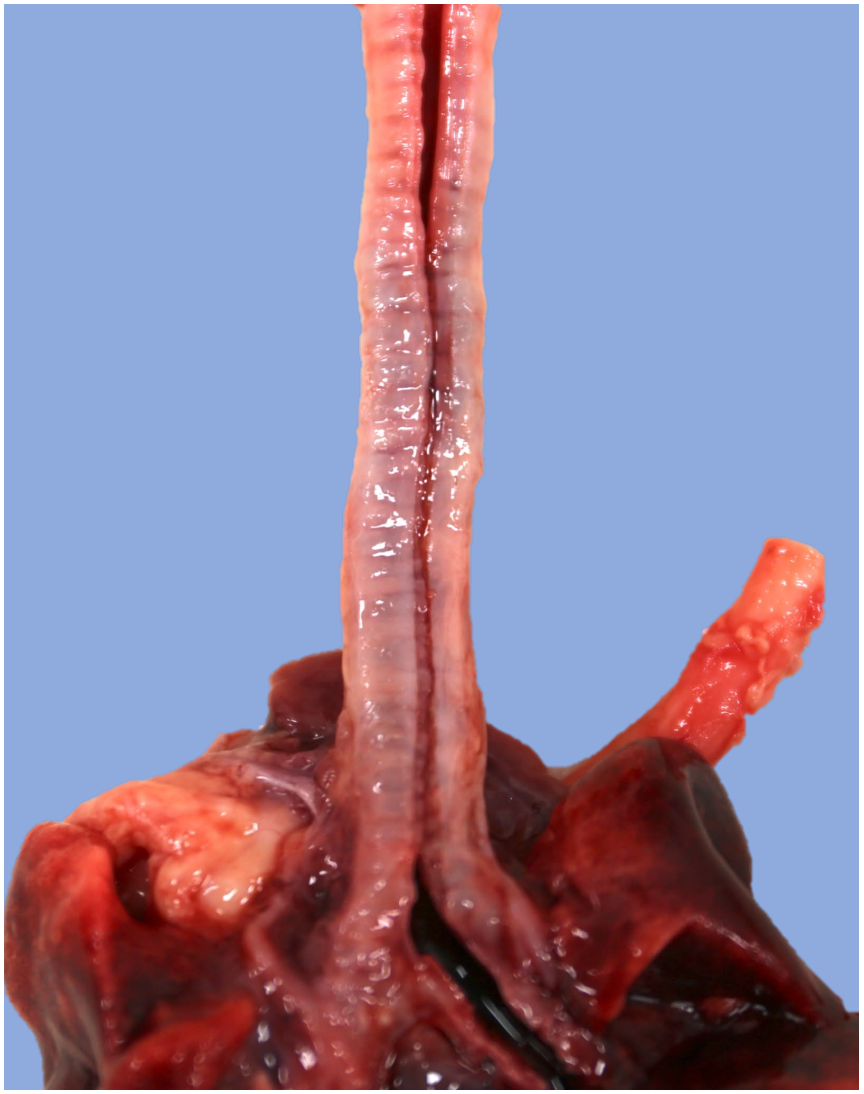
Left atrioventricular and aortic valve: Myxomatous valvular degeneration, mild

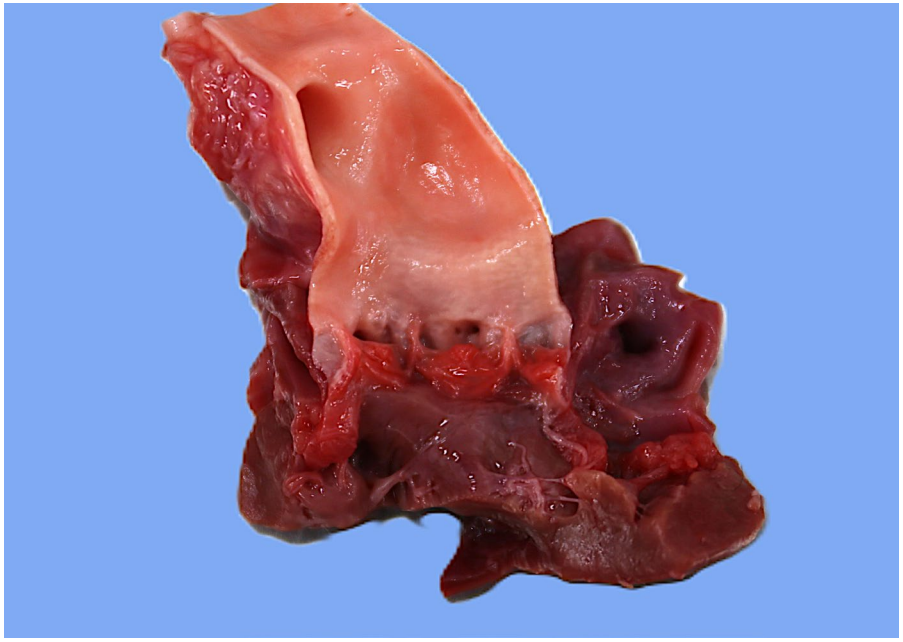
Root and ascending aorta: Intimal thickening, mild, segmental

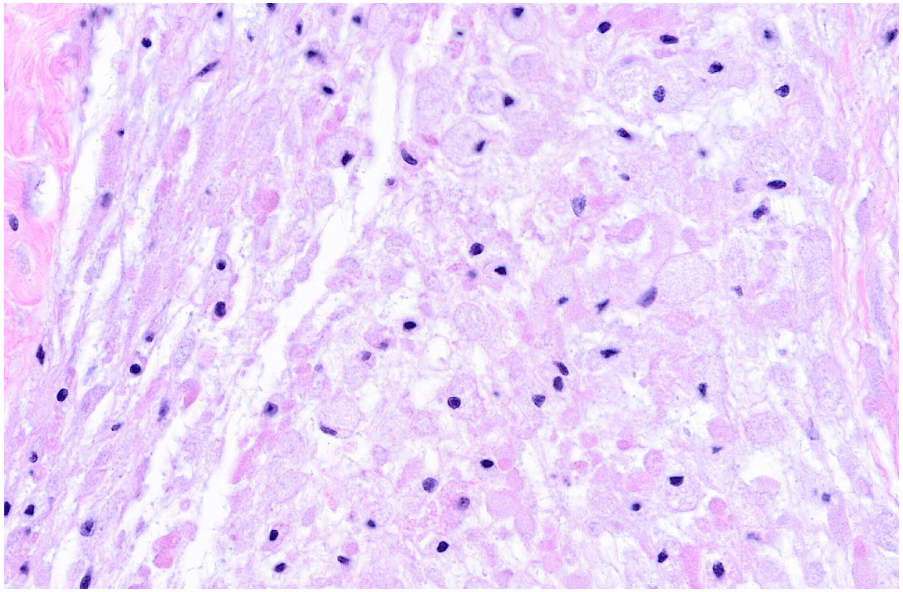
Kidneys: Cortical chronic infarcts, multifocal

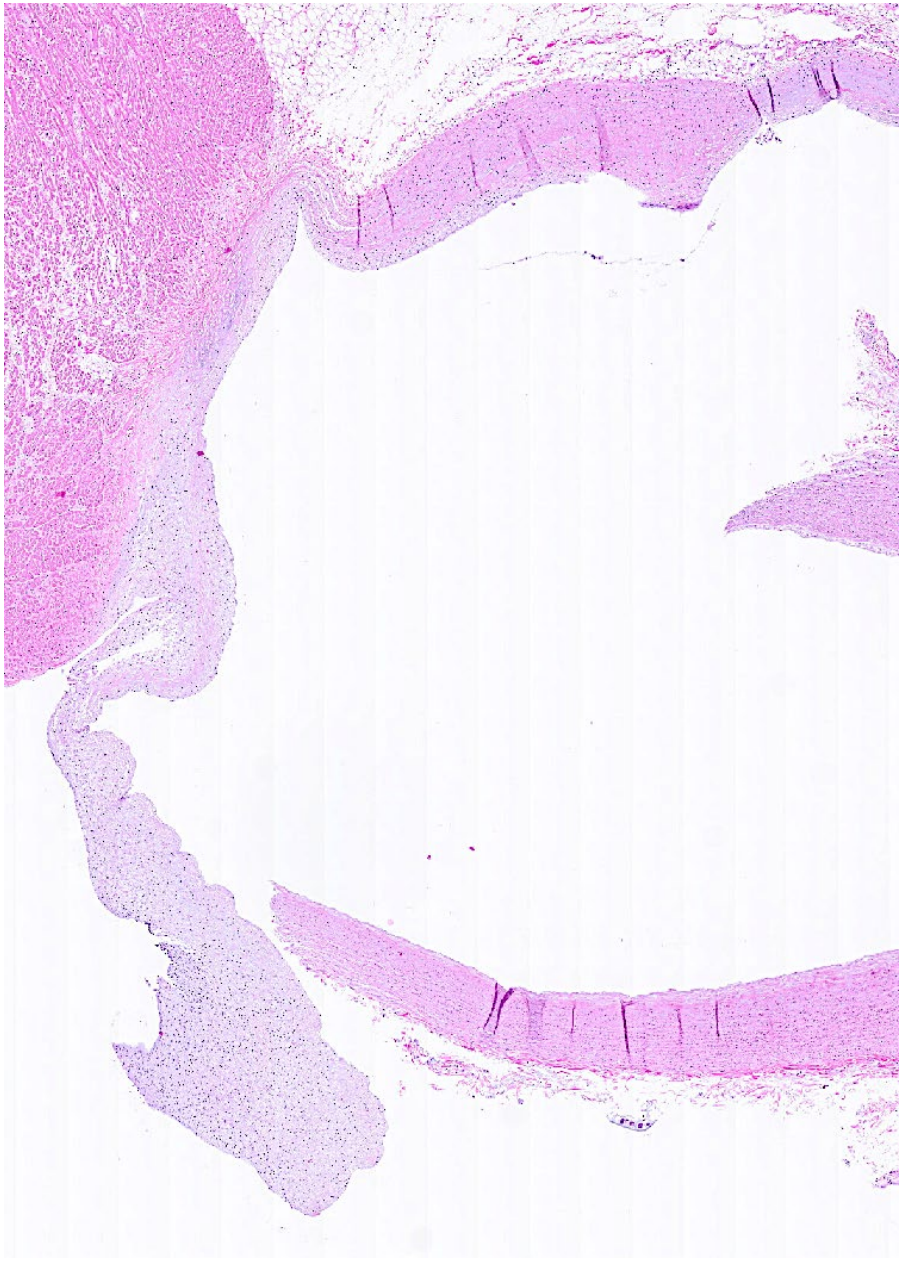


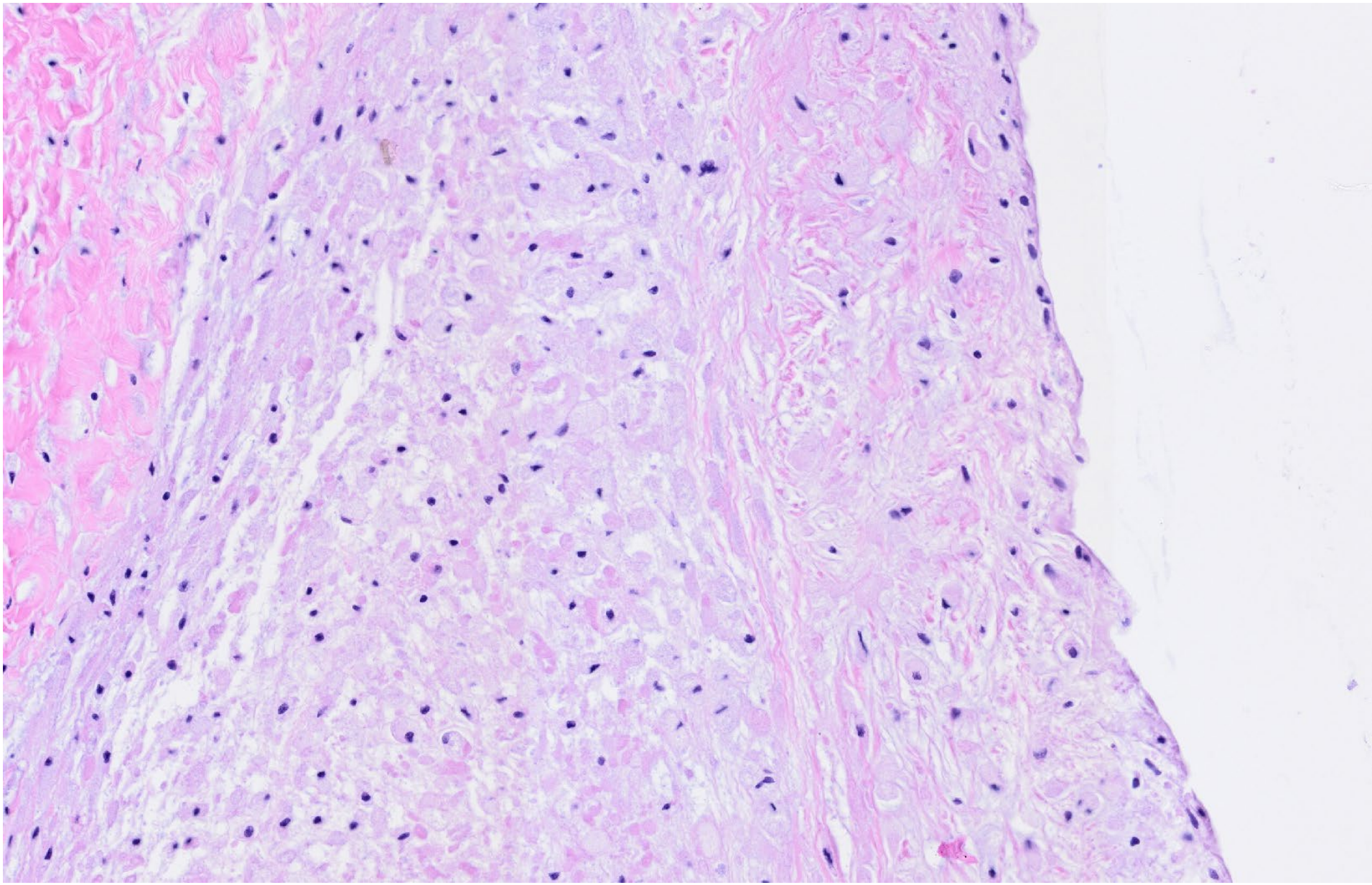


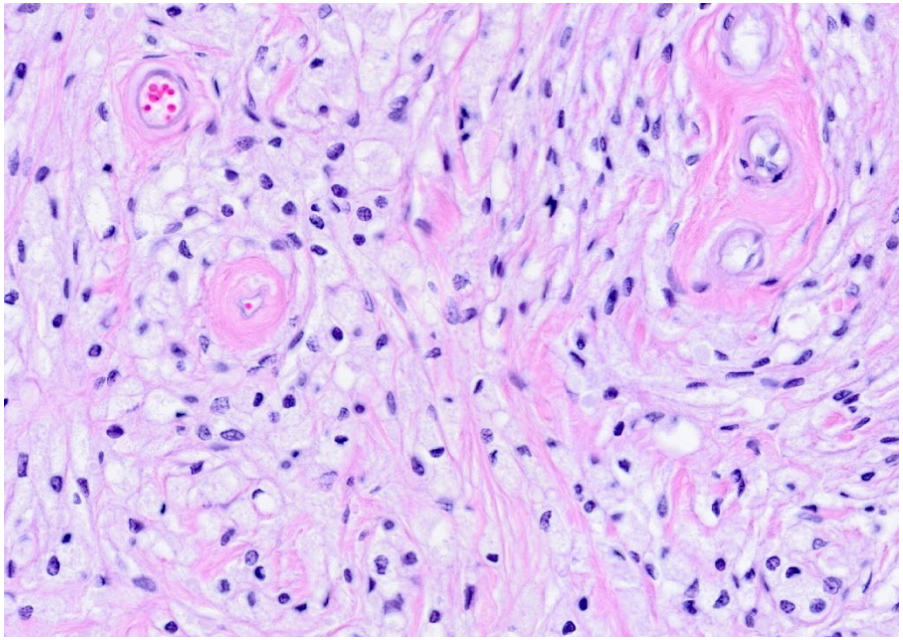


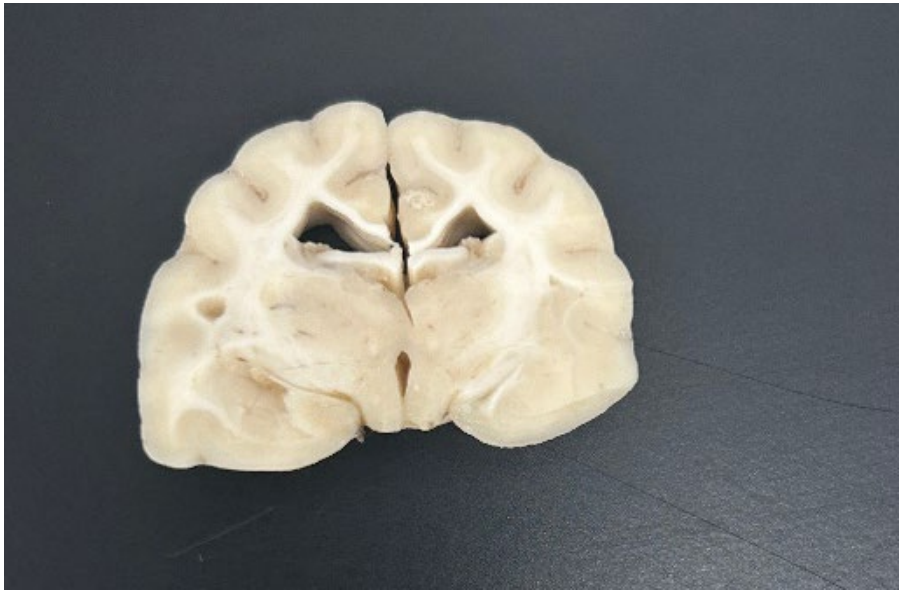


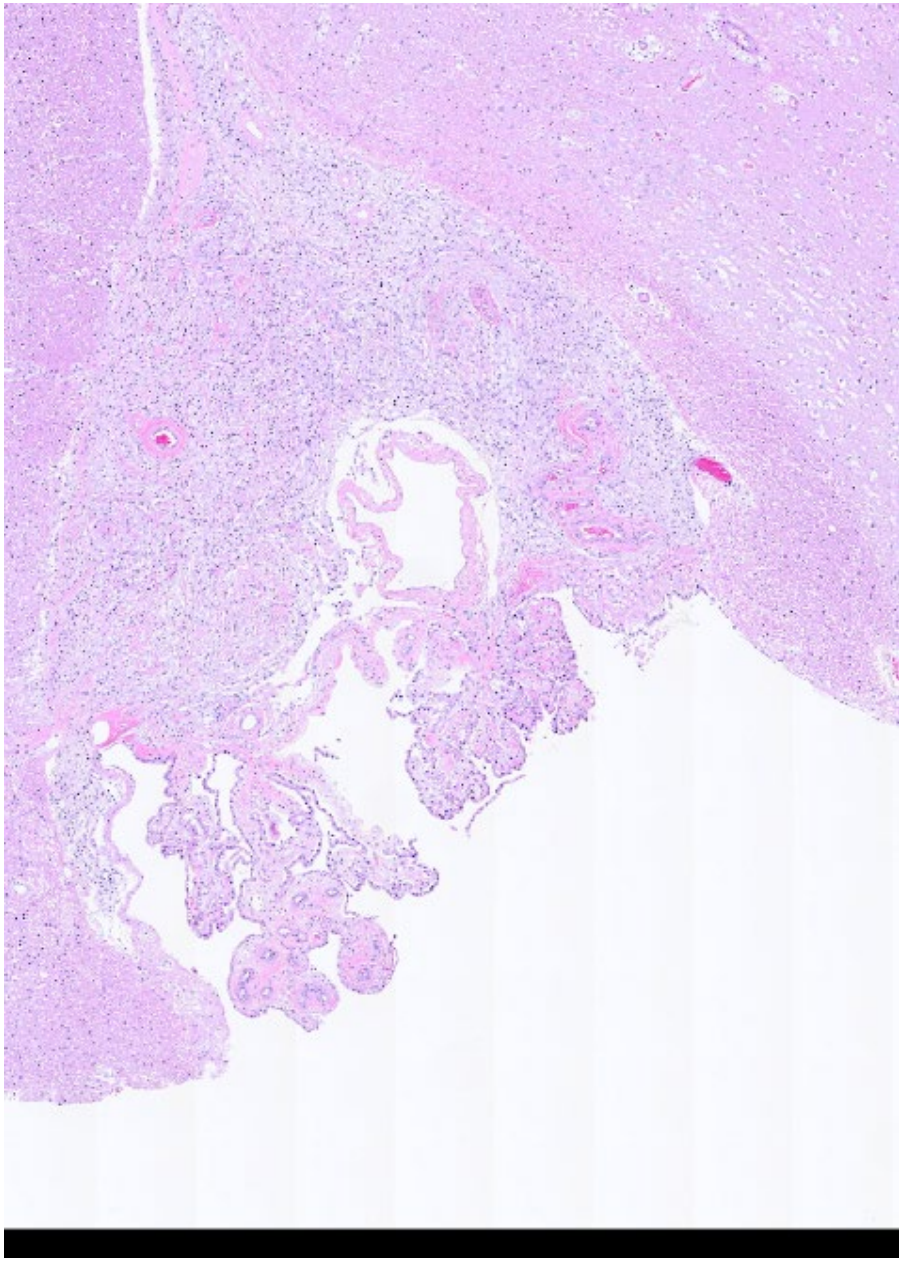












Feline mucopolysaccharidosis

The combined clinicopathologic, gross, and histologic findings of this cat are strongly suggestive of a storage disease, most likely mucopolysaccharidosis.

Diagnosis of mucopolysaccharidosis in cats requires specialized testing, including genetic testing and enzyme activity testing.

The mucopolysaccharidoses are a group of lysosomal storage diseases resulting from genetic deficiencies of enzymes required for the catabolism of mucopolysaccharides.

The gastrointestinal tract of this cat contains macrophages with vacuolated cytoplasm in various anatomical locations, including the nerves and myenteric plexus, which may have contributed to intestinal dysmotility.

CASE 5

24-year-old female pony

- Lethargy and azotemia after being treated at home with NSAIDs and antibiotics due to a right hind limb injury.
- Evidence of electrolyte abnormalities and acute kidney injury
- Suspect hepatic lipidosis and hypertriglyceridemia.
- Developed fever and liquid diarrhea in the first days of hospitalization, which did not resolve for the duration of hospitalization.
- Diarrhea PCR panel and in-house *Salmonella* were negative.
- Full abdominal ultrasound showed kidney damage and thickening of the right dorsal colon.
- Treated medically for the colitis, but became endotoxic and began to exhibit laminitic pain.

Gross findings

Right dorsal colon: Mucosal necrosis with hemorrhage and mural edema

Hepatic lipidosis

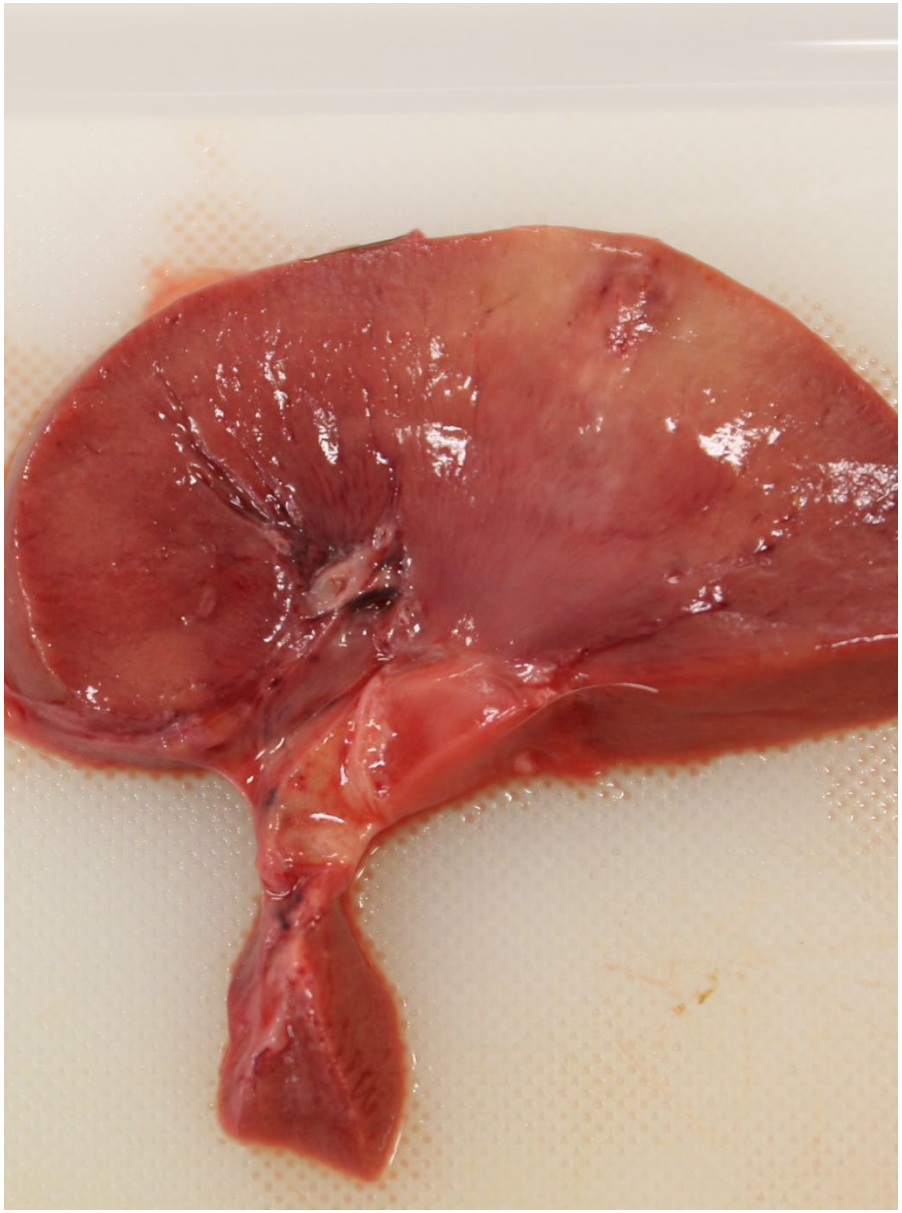
Right kidney: Cortical necrosis, focally extensive

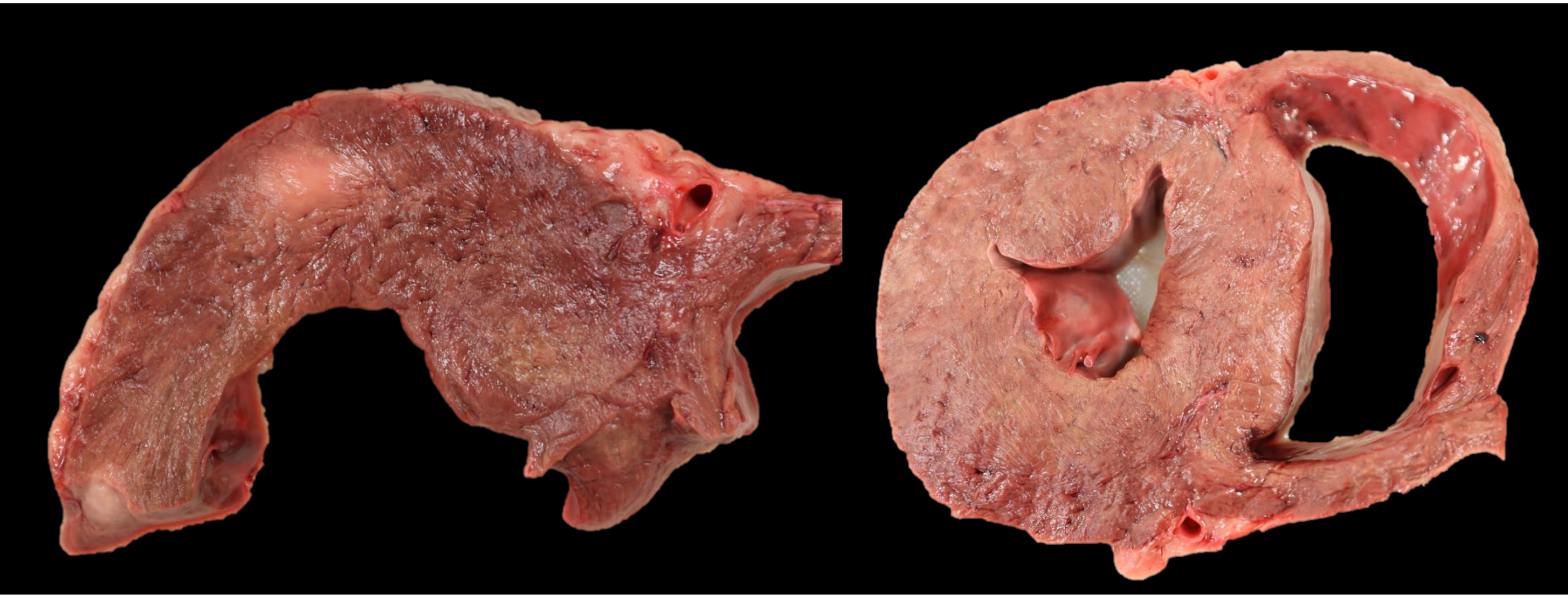
Front feet: Laminitis, acute, marked

Heart, right and left ventricles: Myodegeneration, extensive, marked

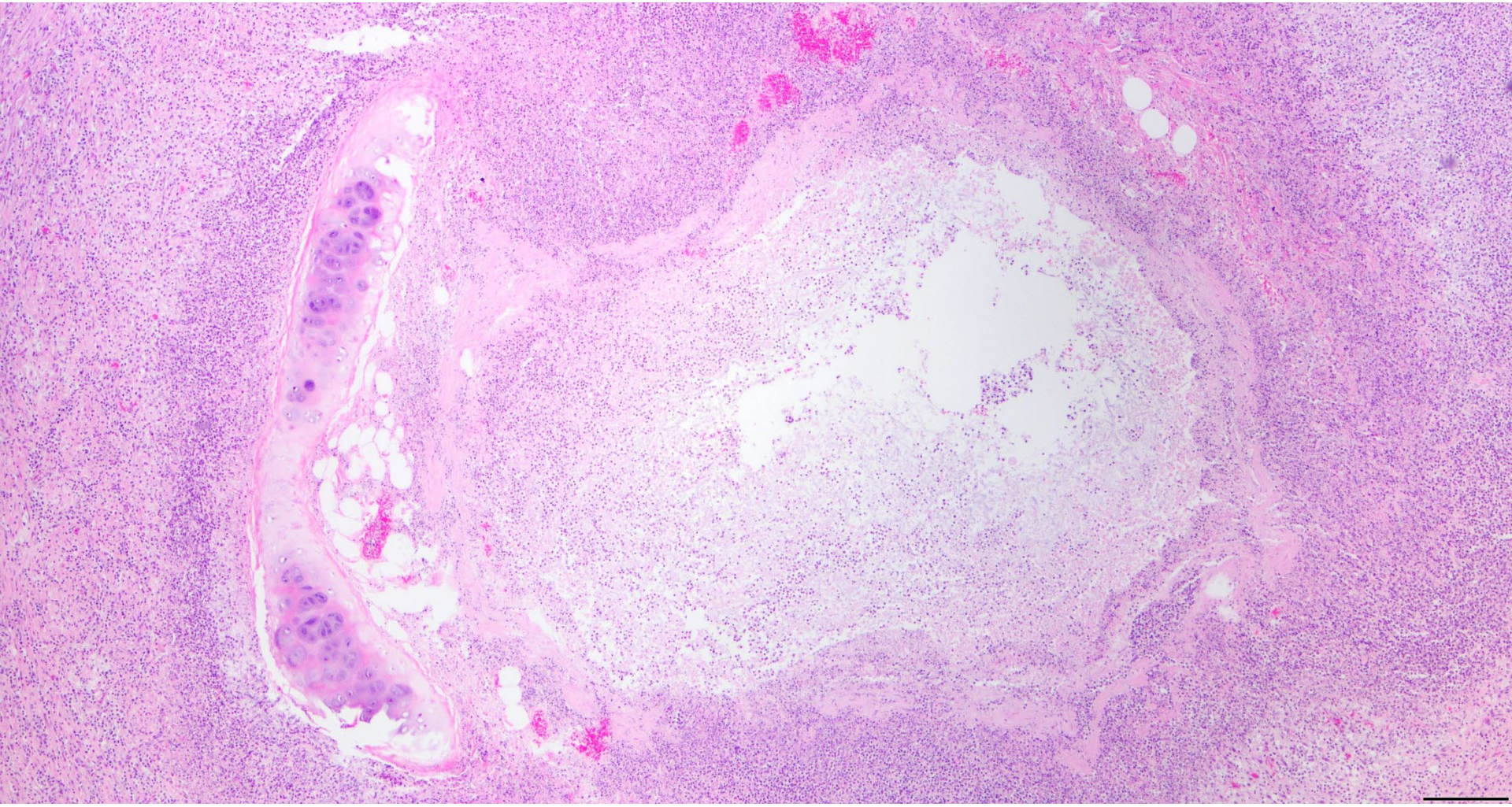
Heart, anterior and lateral left ventricle: Multiple masses

Lung: Multiple masses

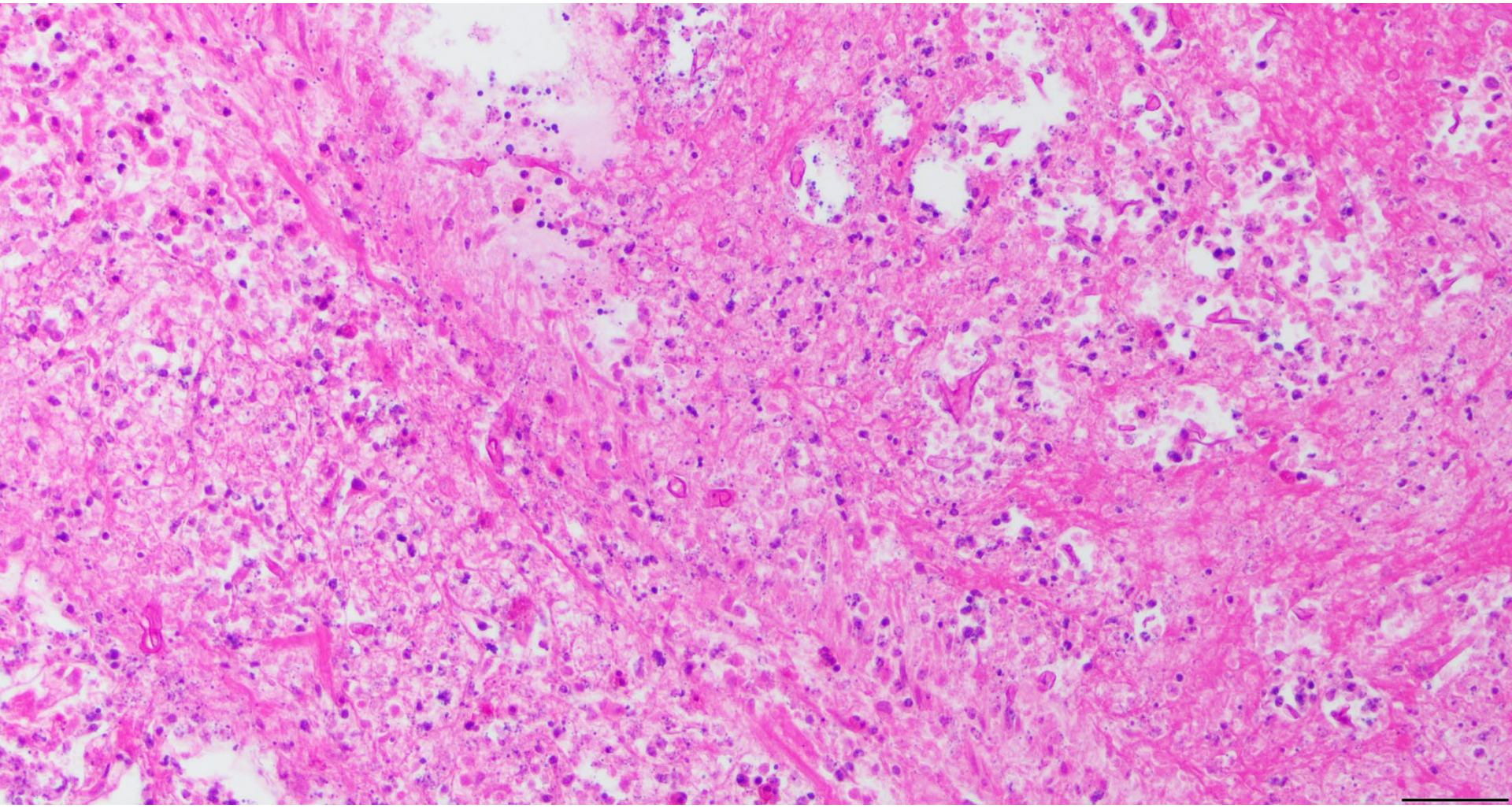




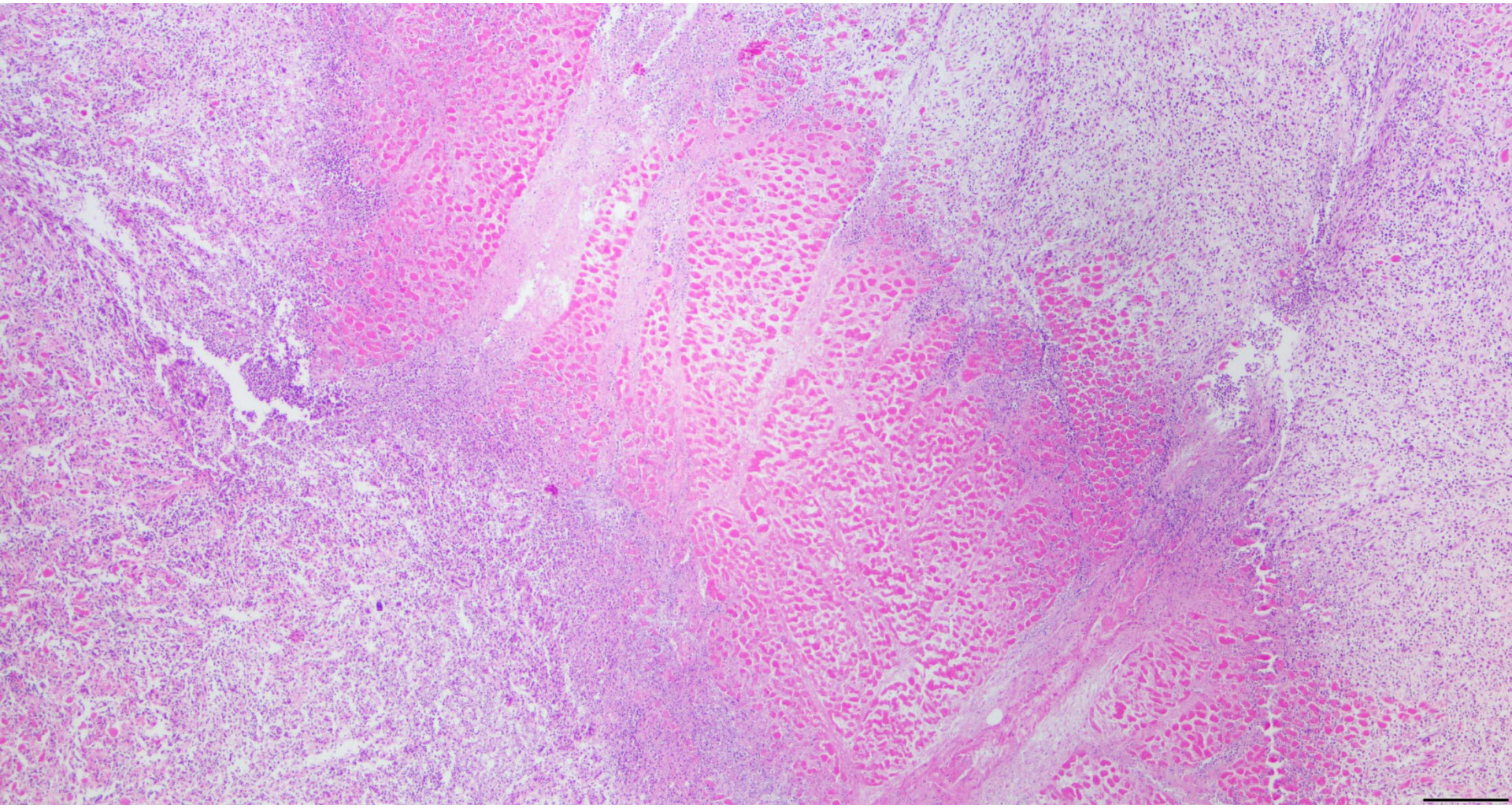
Lung

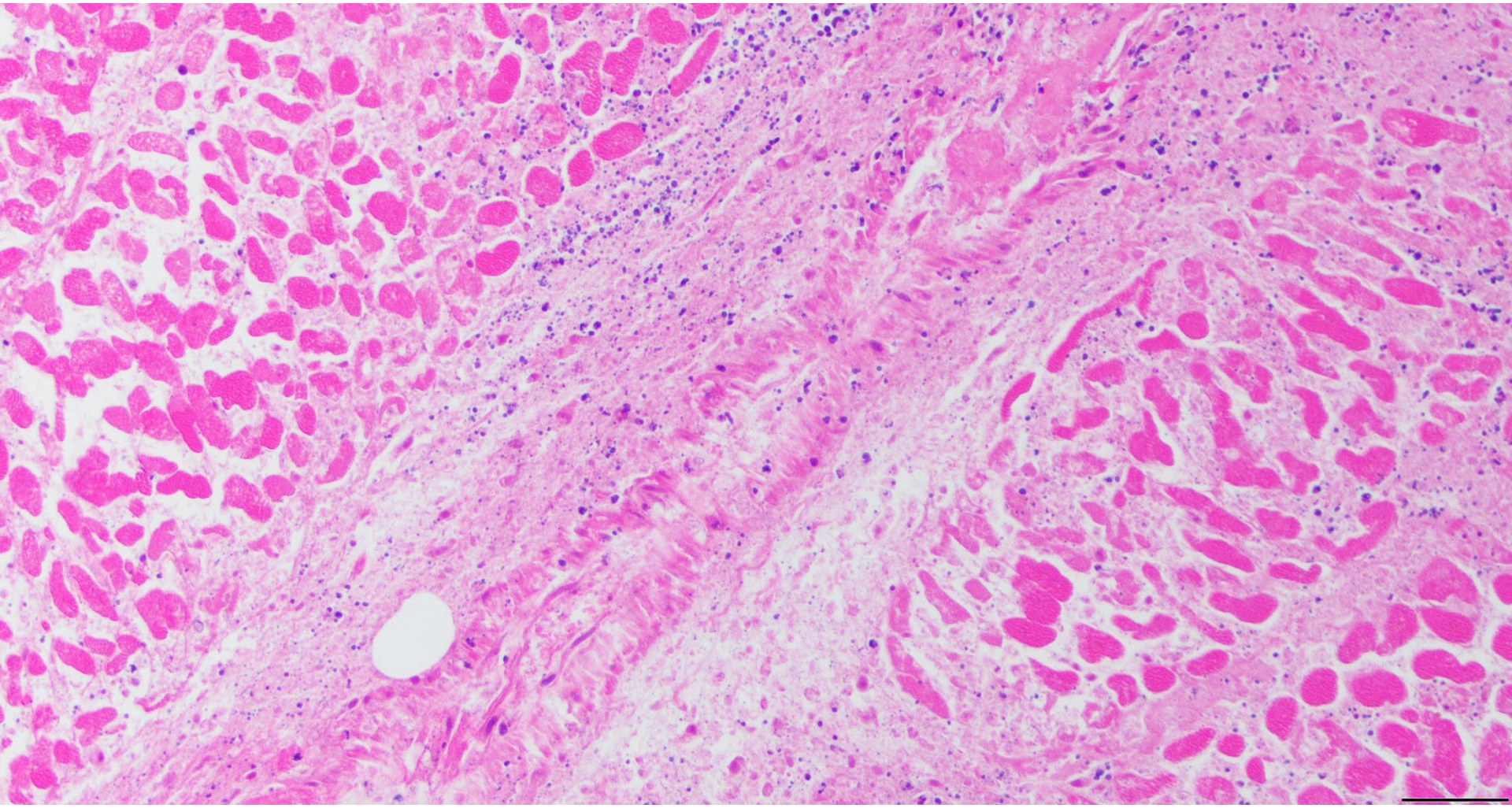


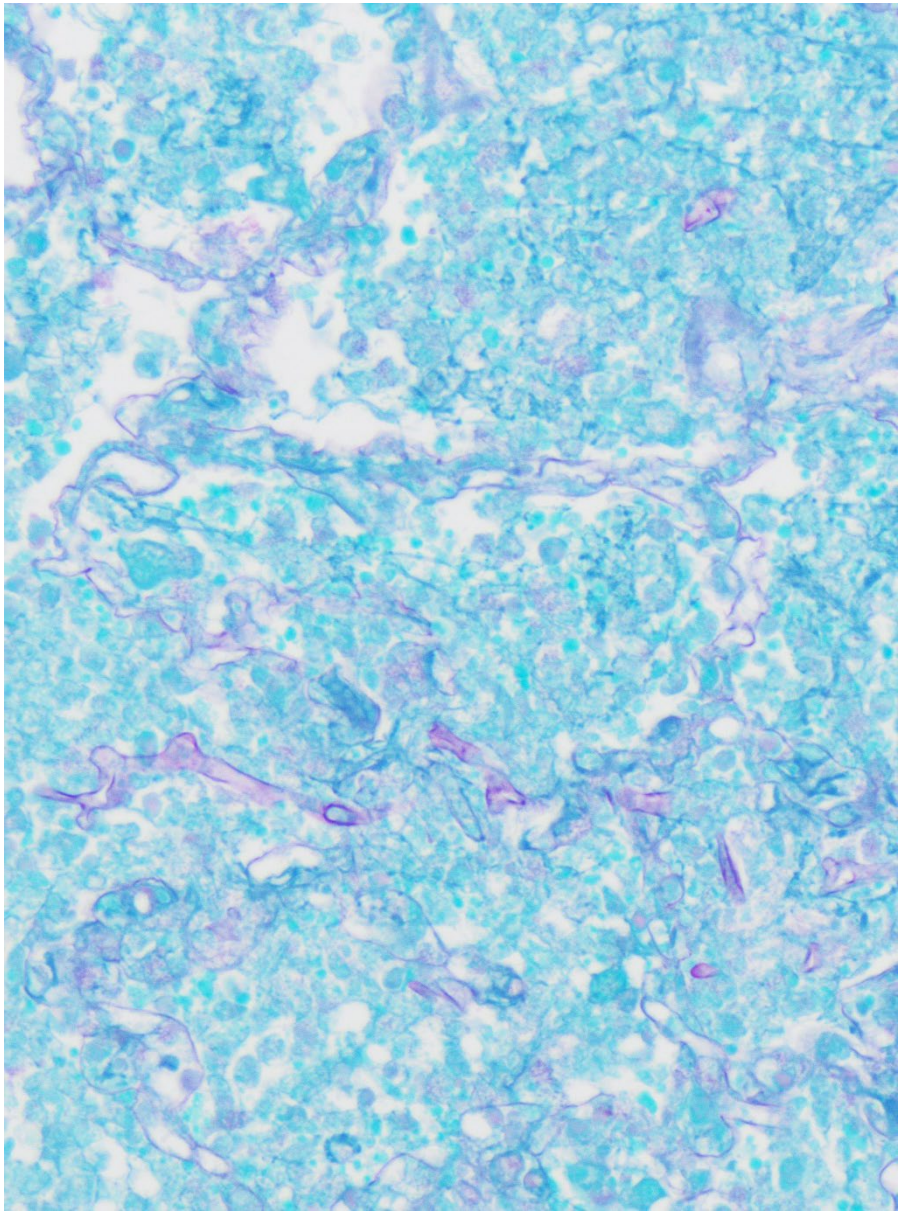
Lung

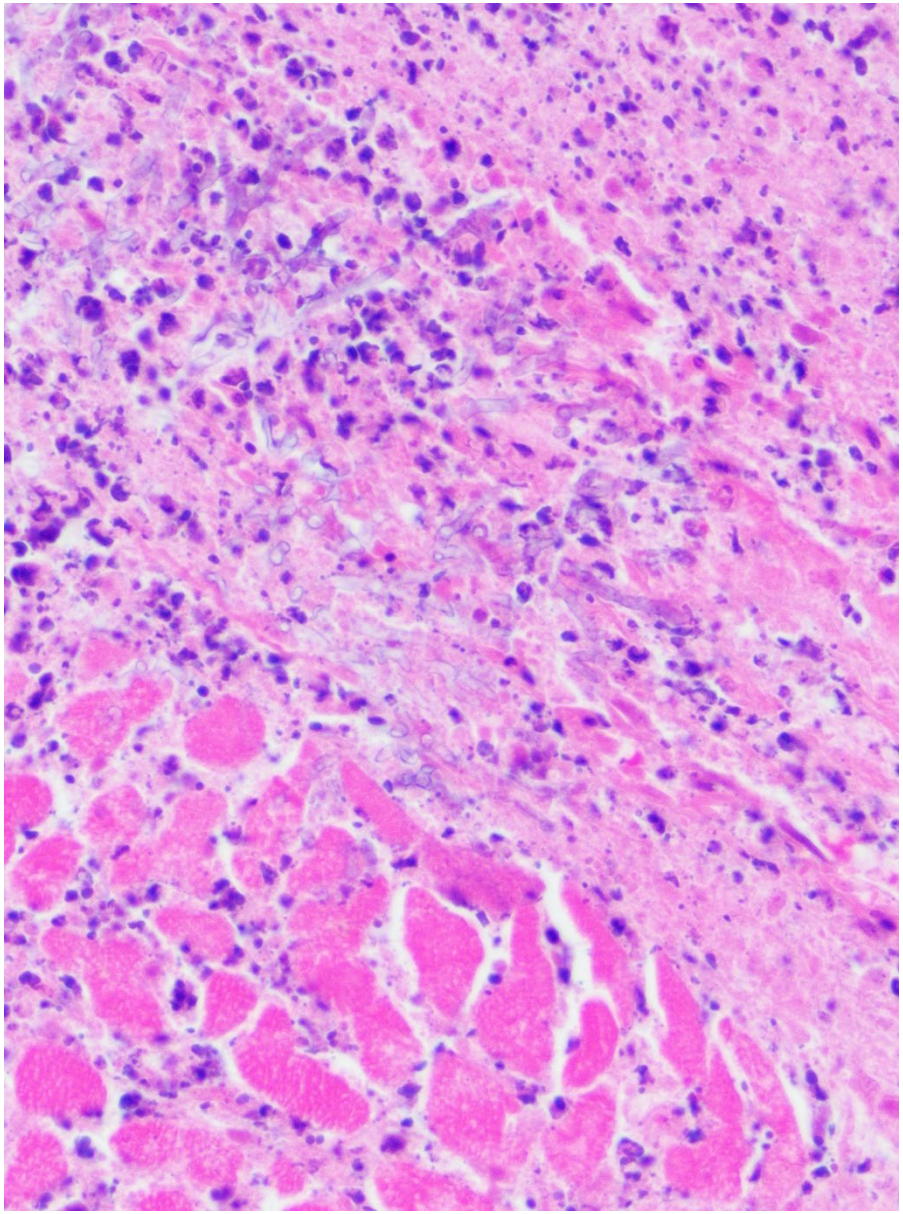


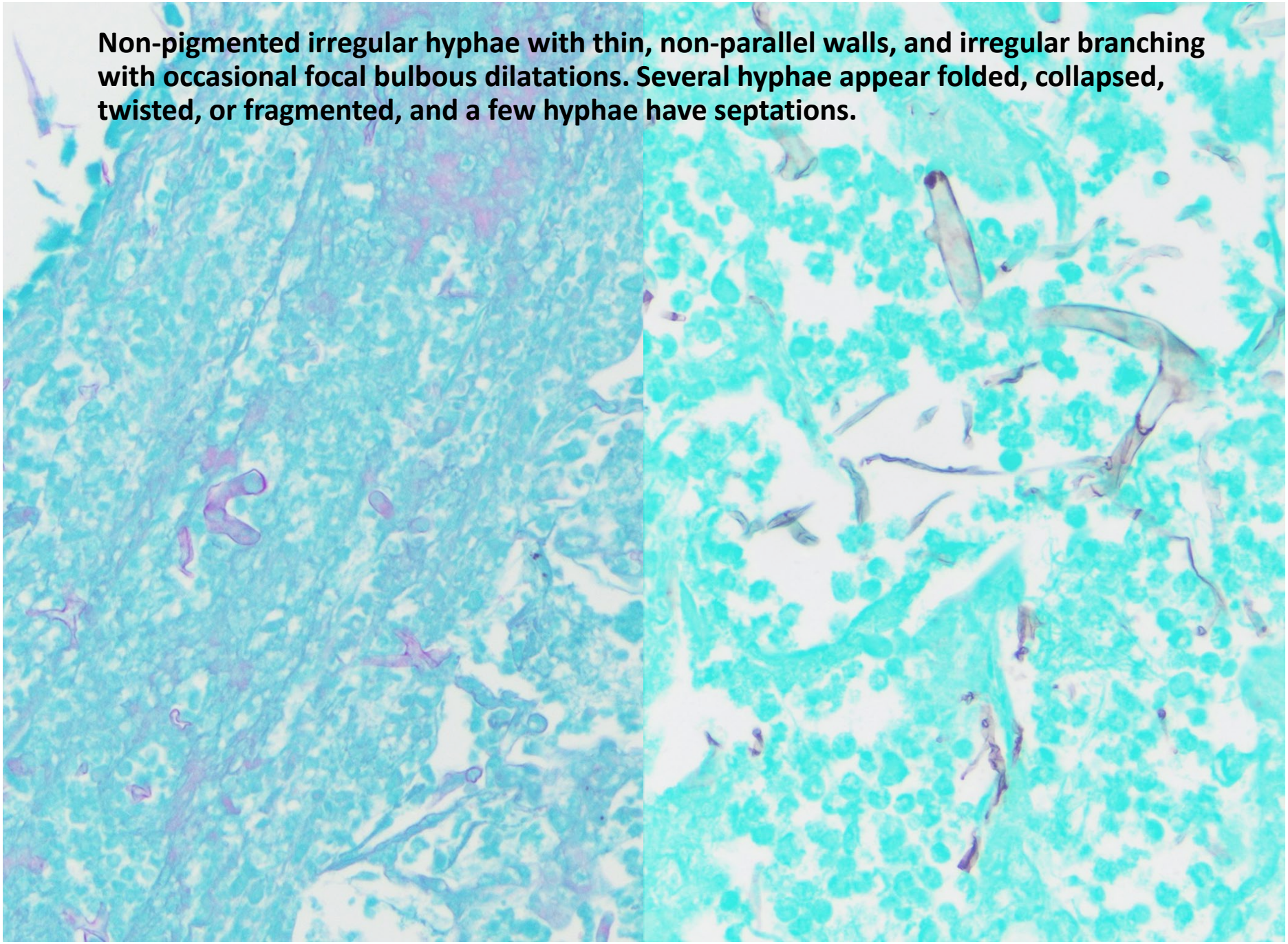
Heart

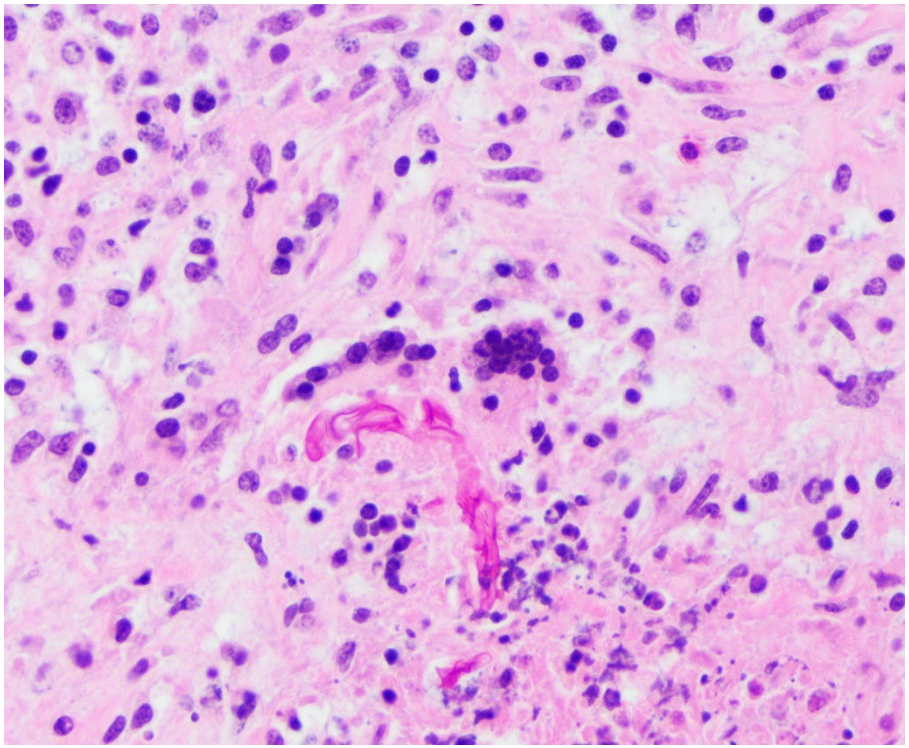


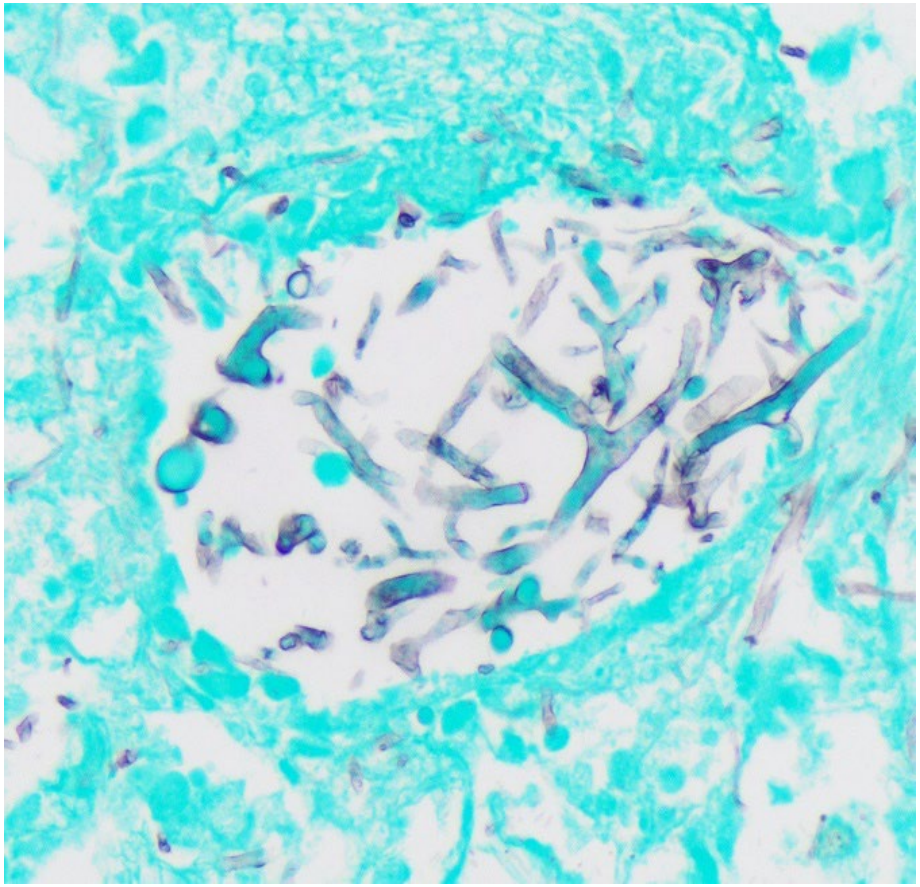







Non-pigmented irregular hyphae with thin, non-parallel walls, and irregular branching with occasional focal bulbous dilatations. Several hyphae appear folded, collapsed, twisted, or fragmented, and a few hyphae have septations.





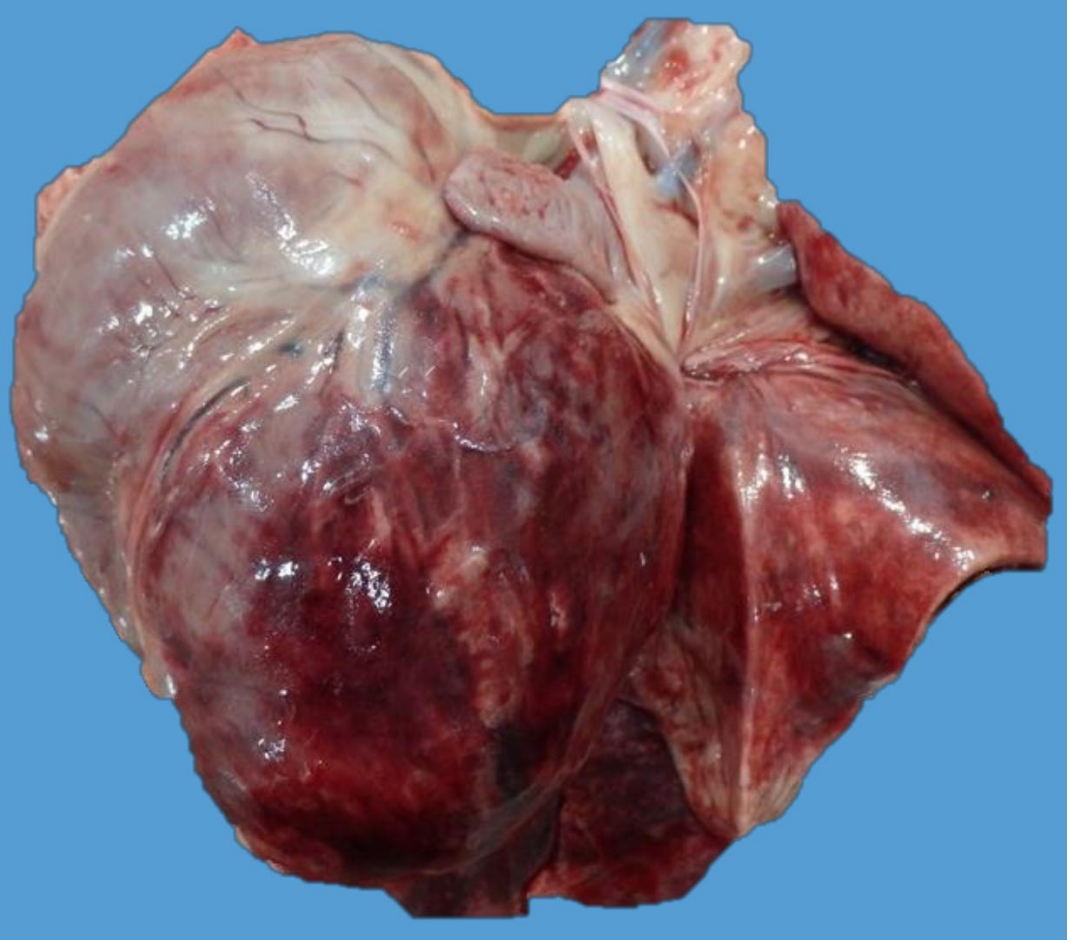
Numerous 4-10 um wide, non-pigmented (hyaline), sparsely septate, irregular hyphae with thin, non-parallel walls, and irregular branching with occasional focal bulbous dilatations. Several hyphae appear folded, collapsed, twisted, or fragmented, and a few hyphae have septations.

Severe necrosuppurative myocarditis, nephritis, and bronchopneumonia, with vasculitis, and thrombosis associated with the presence of hyphae.

Morphologic findings suggest an infection with **Zygomycetes;** the differential diagnosis also includes other septate hyphae such as *Aspergillus* spp.

Severe colitis, corticosteroid therapy, neoplasms, hepatitis, pleuritis, and peritonitis predispose to fungal pneumonia that may secondarily become systemic.

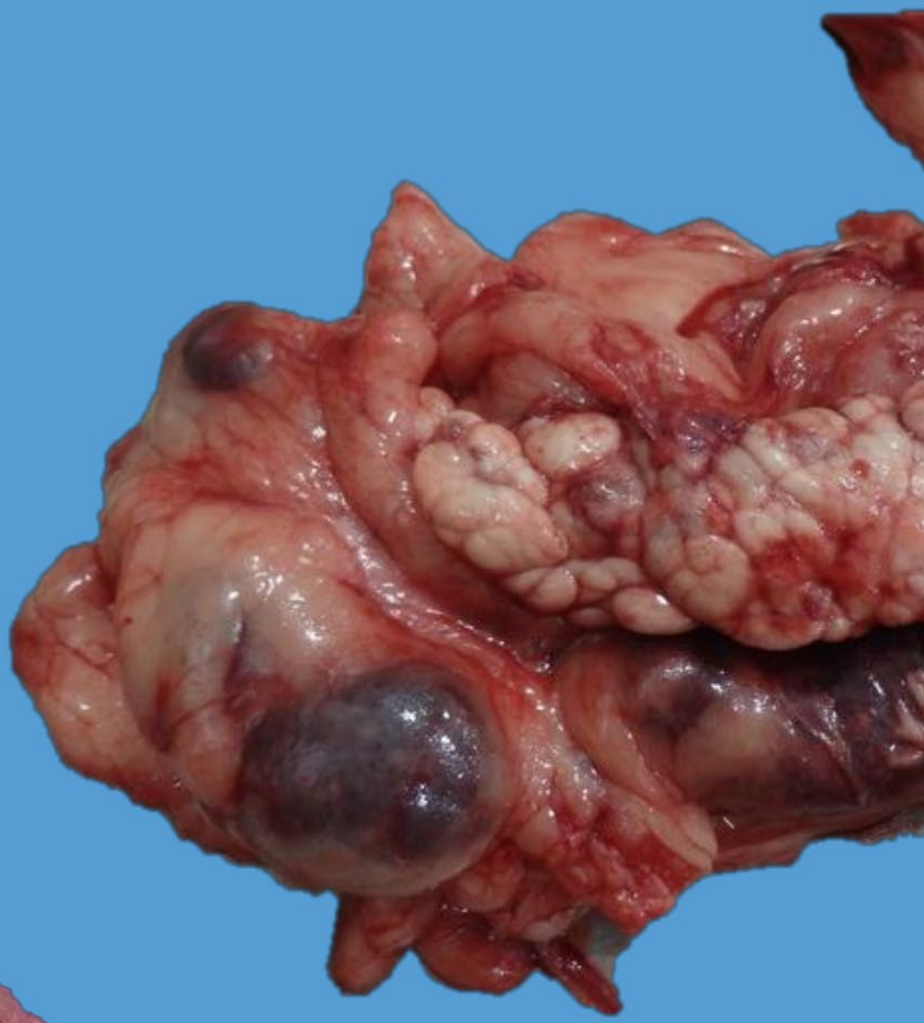
CASE 6

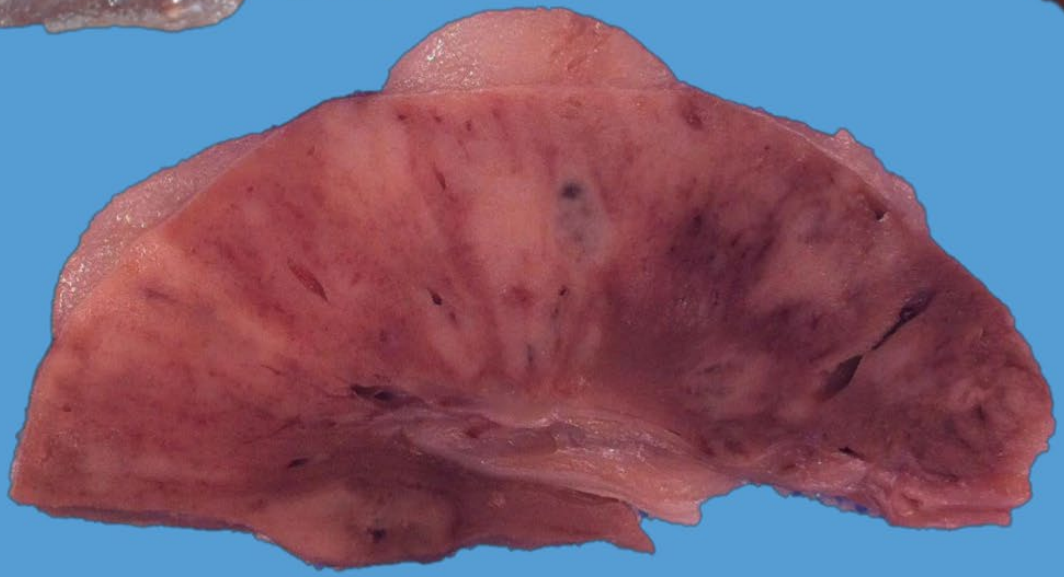


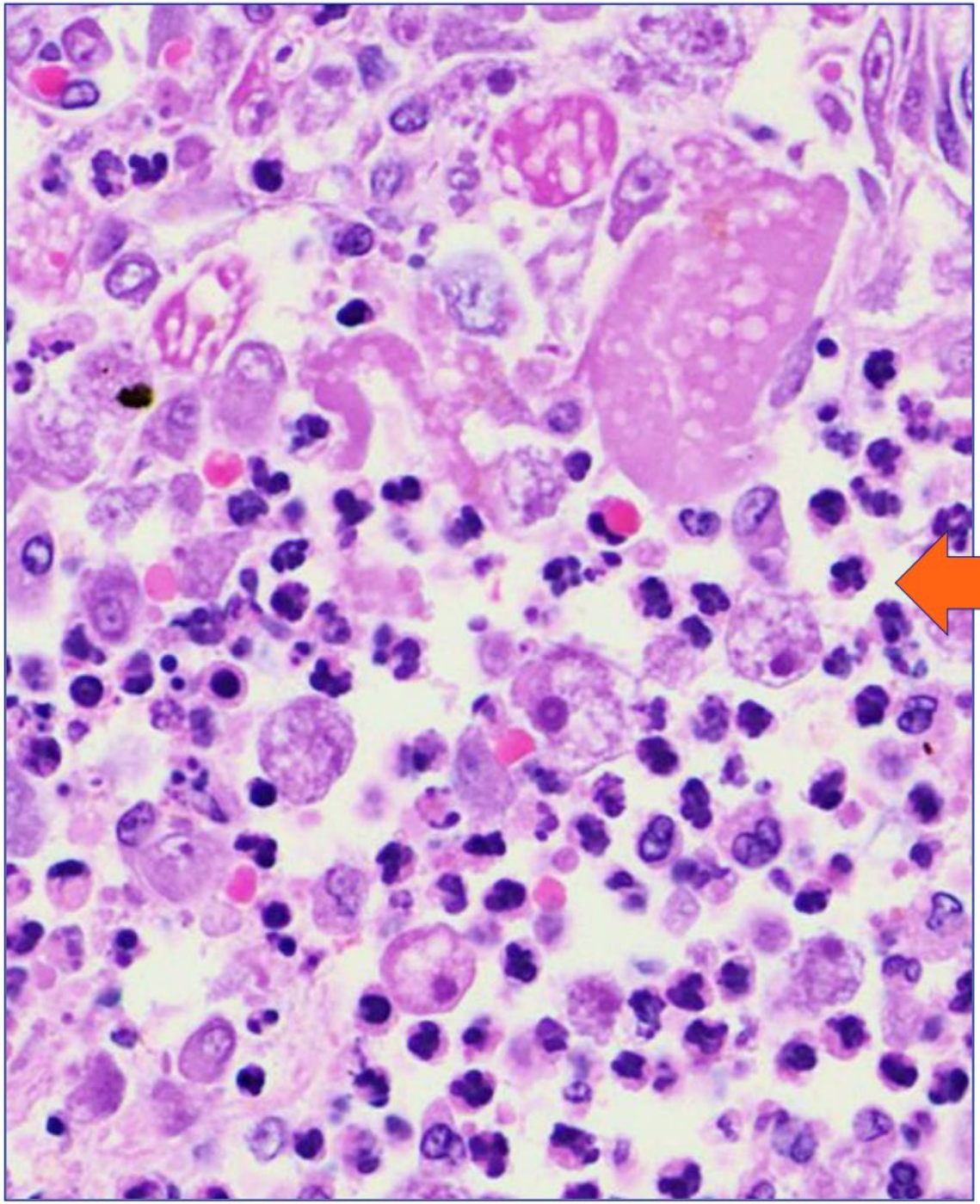
7-year-old, male castrated, Labrador Retriever

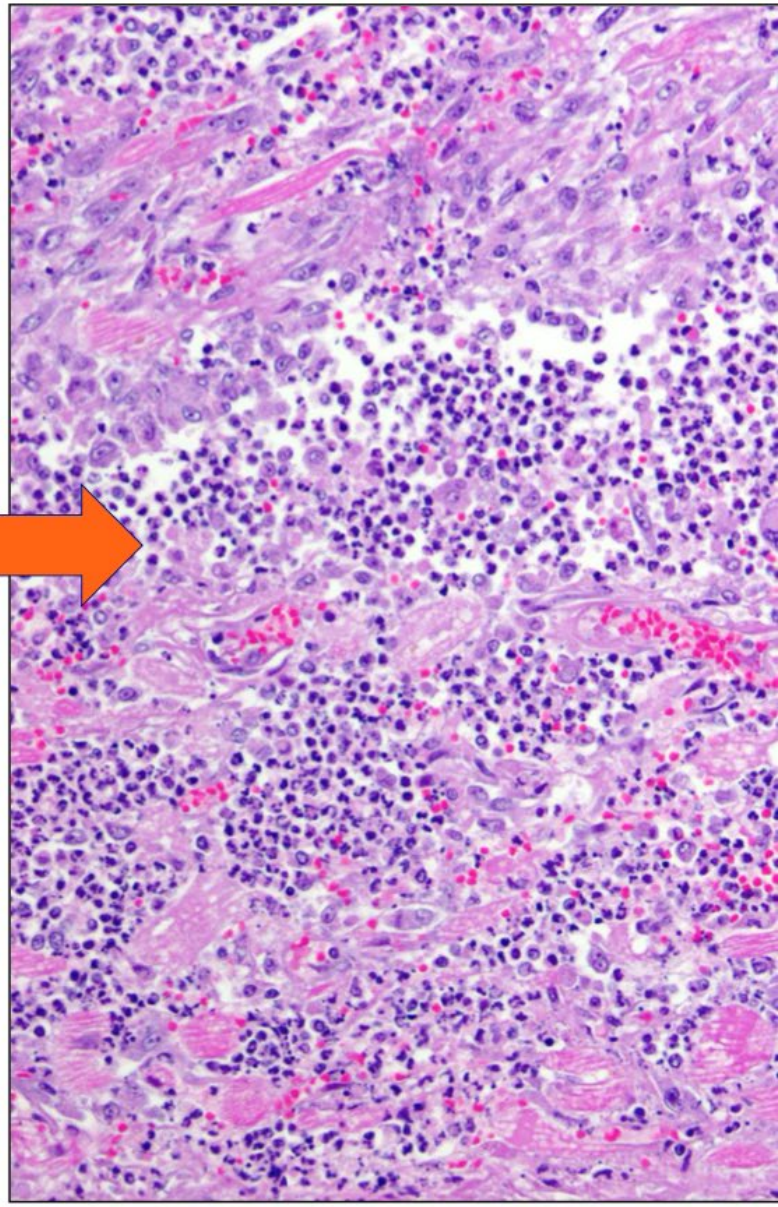
Allergic dermatitis treated with prednisone
One month later: lymphocytosis, anemia and thrombocytopenia

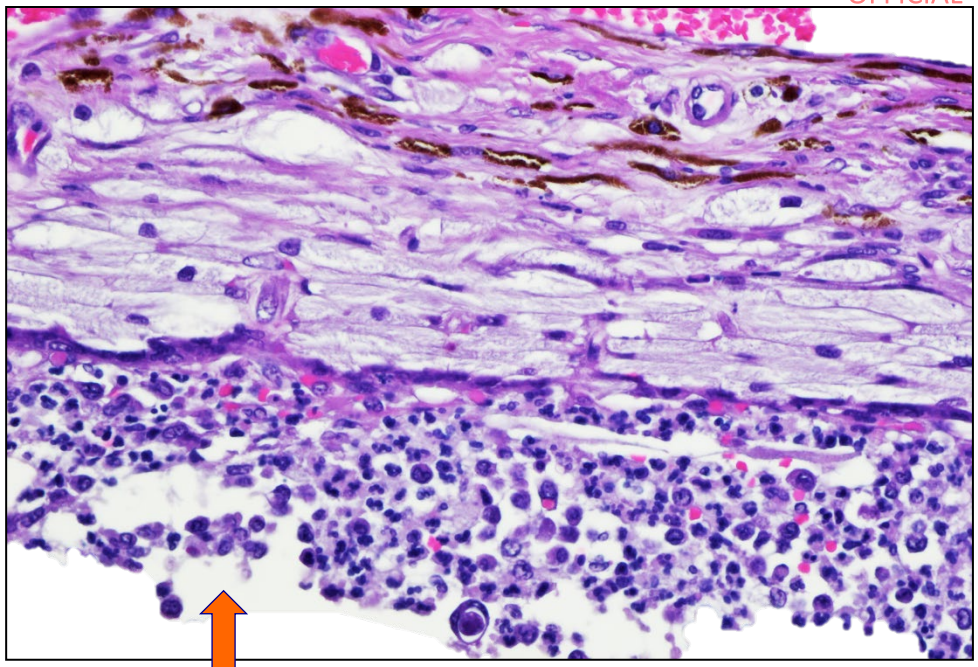
AUTH: chronic lymphocytic leukemia
Chemotherapy for 2.5 months: prednisone, vincristine, doxorubicin, L-asparaginase, chlorambucil with partial response

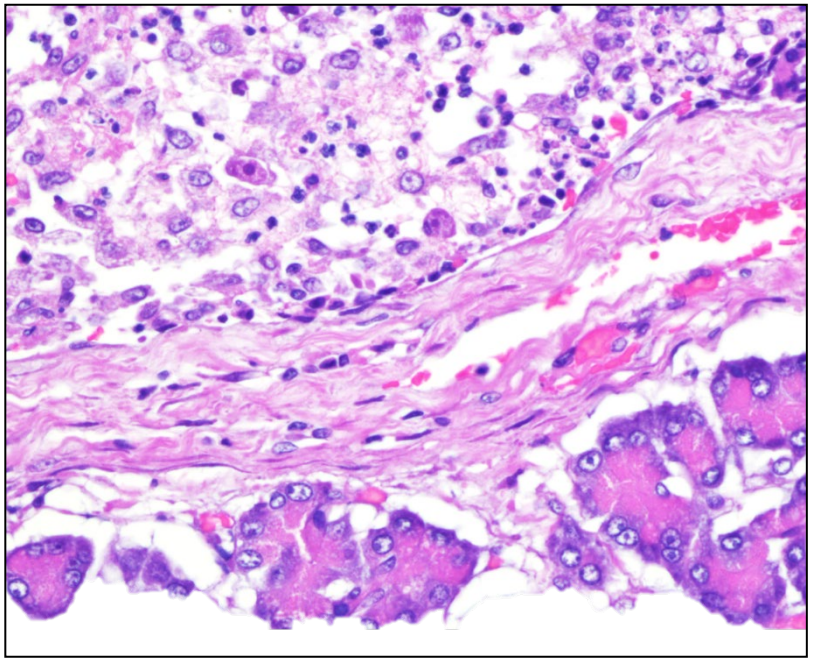


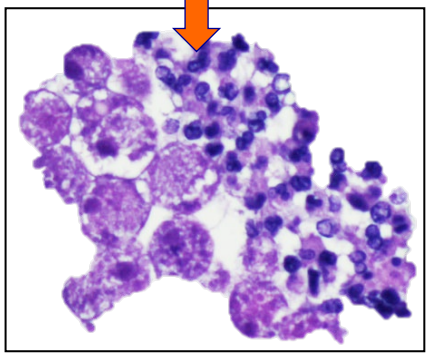


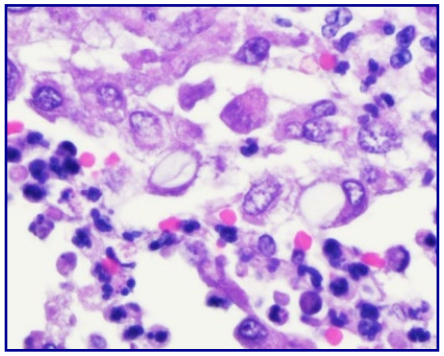


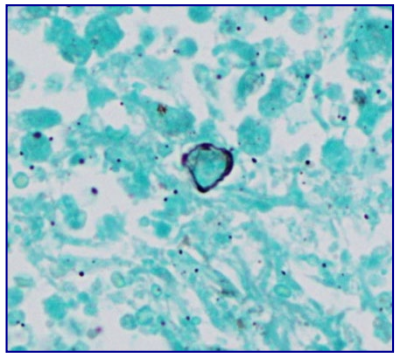






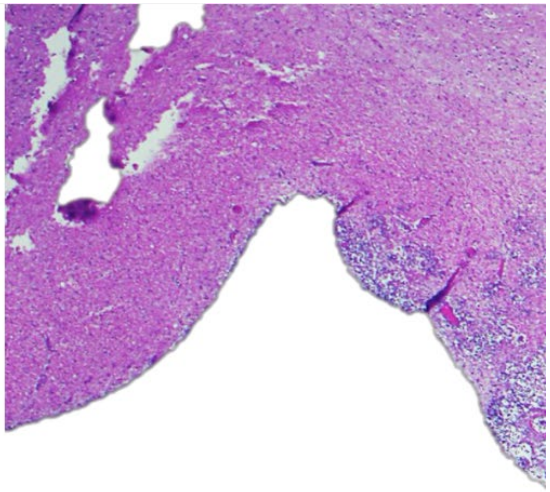


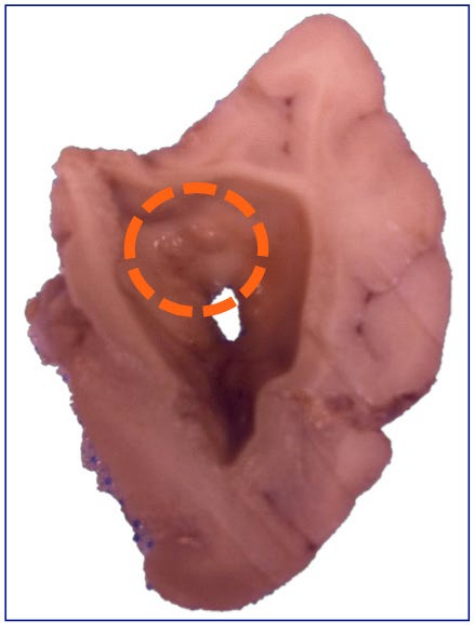


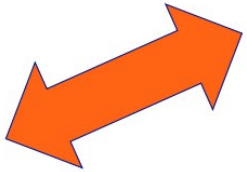


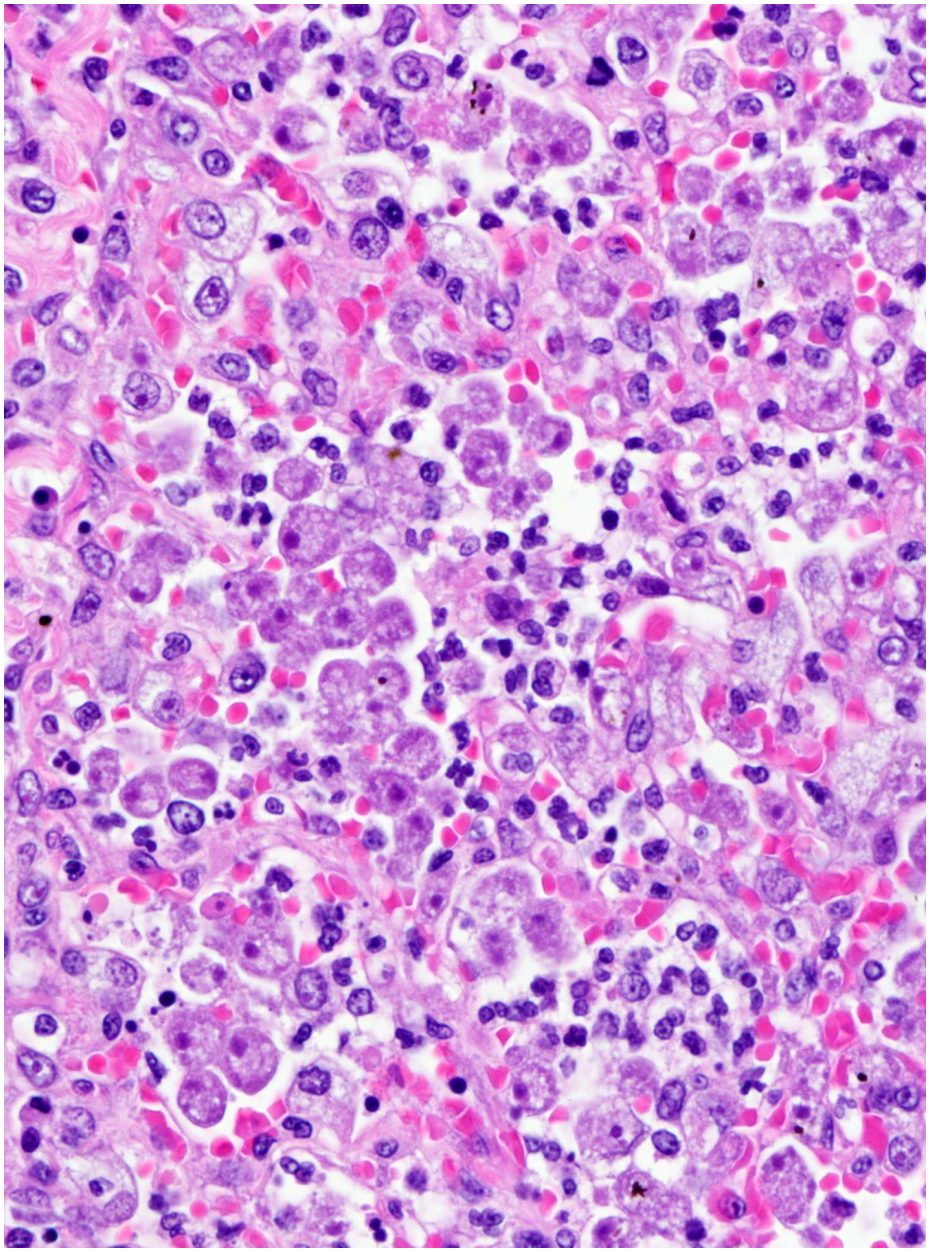
10-20 µm diameter, irregularly round structures with abundant microvacuolated cytoplasm, and a single 7 µm eccentric magenta nucleus with a 1-2 µm basophilic karyosome

Cysts are irregular, with a thick 1-2 µm, wavy outer wall.





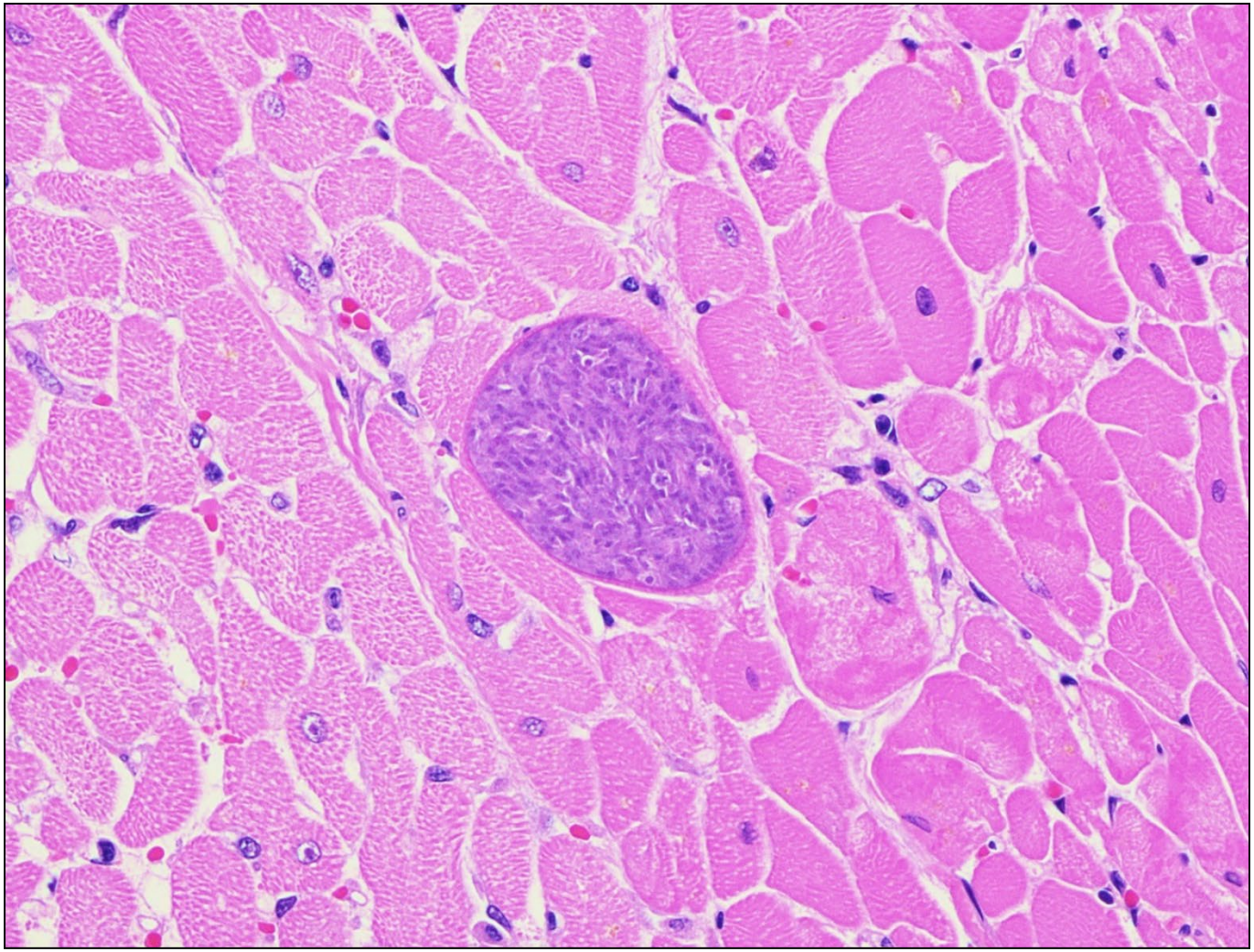




Sarcocystis

S. bovicanis - cattle intermediate hosts

S. ovicanis - sheep intermediate hosts



Cardiomyocyte expanded by a protozoal cyst that measured 400 µm in diameter, lined by a thin, hyalinized wall, and contains innumerable 7 x 2 µm, crescent-shaped bradyzoites.

Centers for Disease Control and Prevention
National Center for Emerging and Zoonotic Infectious Diseases (NCEZID)
Division of High-Consequence Pathogens & Pathology (DHCPP)
Infectious Diseases Pathology Branch (IDPB)
Pathology Report
CLIA ID 11D0668319

Results:

Specimen	Test	Result
IHC		
Heart	N. fowleri/Acanthamoeba spp/B. mandrillaris (1309)	Positive
Brain	N. fowleri/Acanthamoeba spp/B. mandrillaris (1309)	Positive
Heart	Acanthamoeba healyi (1387)	Positive

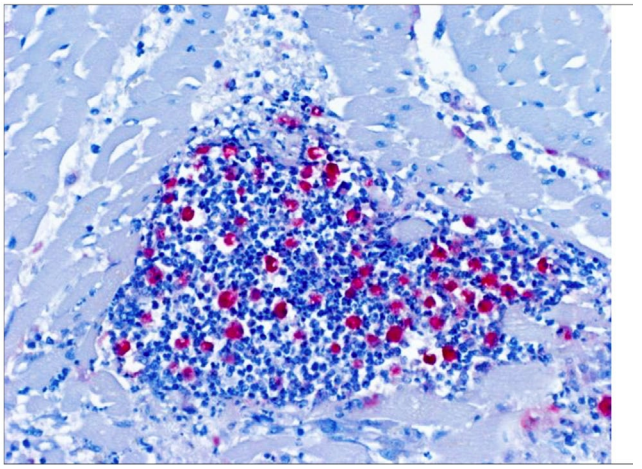


Image 5. Heart. Acanthamoeba healyi IHC.

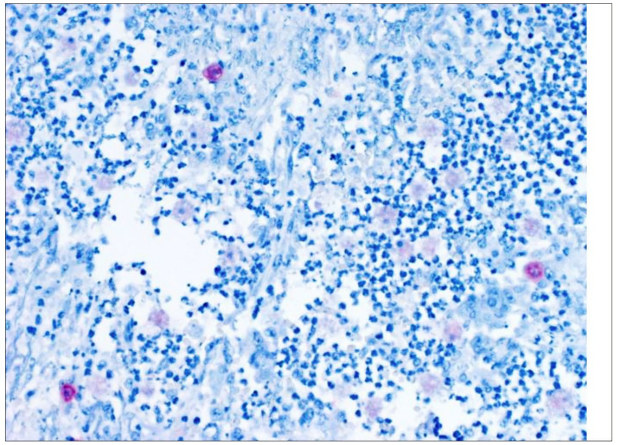


Image 3. Brain. Amoeba pool IHC.

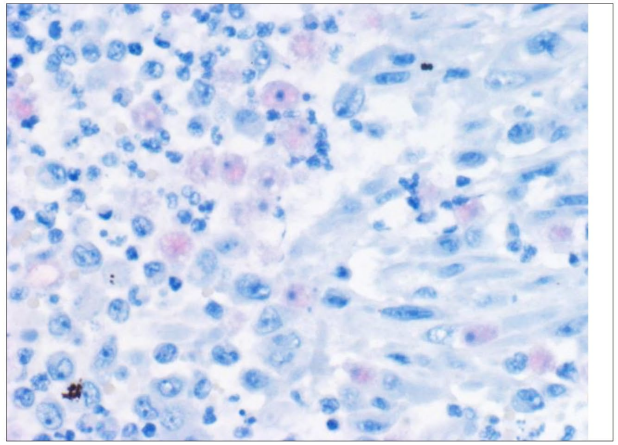


Image 4. Heart. Amoeba pool IHC.

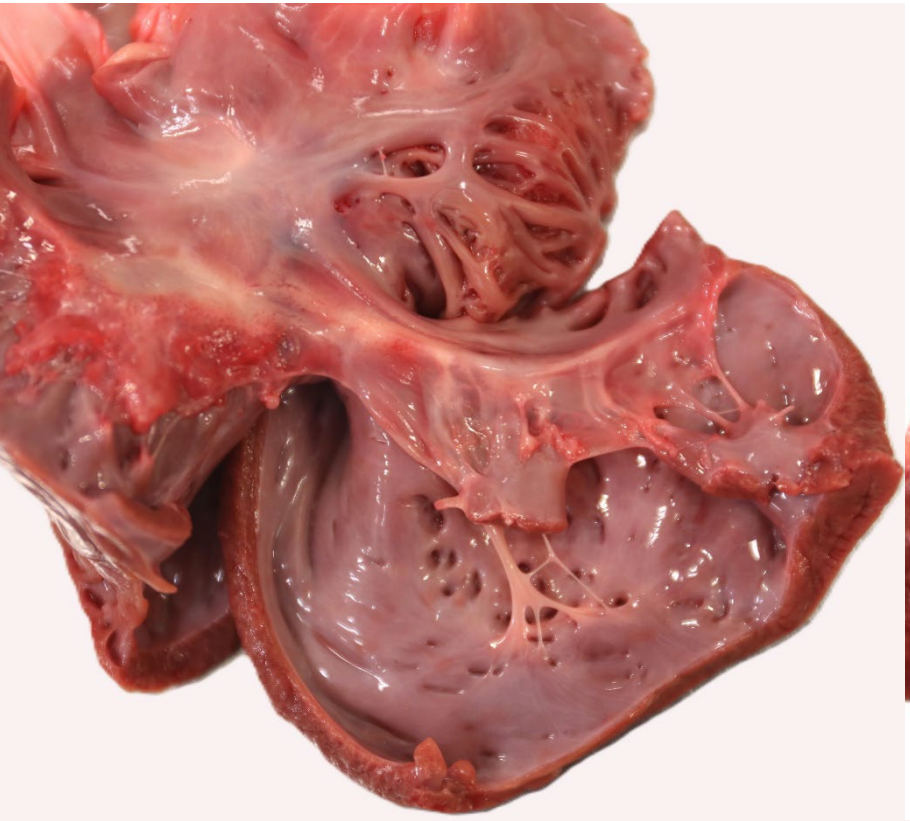
Systemic acanthamoebiasis

CASE 7

3.6-year-old, neutered male, Labrador Retriever

- Enrolled in osteosarcoma immunotherapy clinical trial.
- Osteosarcoma of the right distal tibia - had an amputation.
- Died at rDVM this afternoon under anesthesia for a dental procedure.

There was no evidence of pulmonary metastatic disease on the most recent X-rays.



Bilateral valvular dysplasia with eccentric hypertrophy

The dysplastic right and left atrioventricular valves could have led to valvular and hemodynamic dysfunction, increasing the risk of complications during anesthesia.

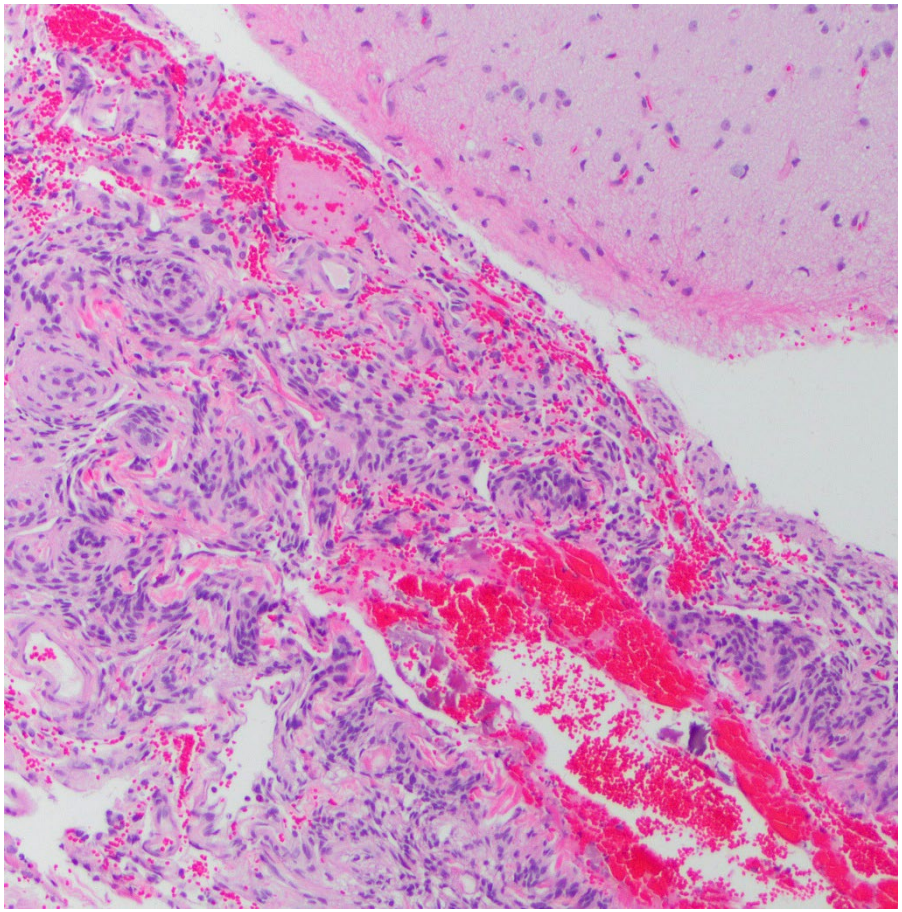
Anesthetic complications are common in cardiac patients due to their reduced ability to regulate heart rate and cardiac output. This puts them at risk of altered drug distribution, hypotension, hypothermia, cardiac arrhythmias, reduced tissue perfusion, and death.

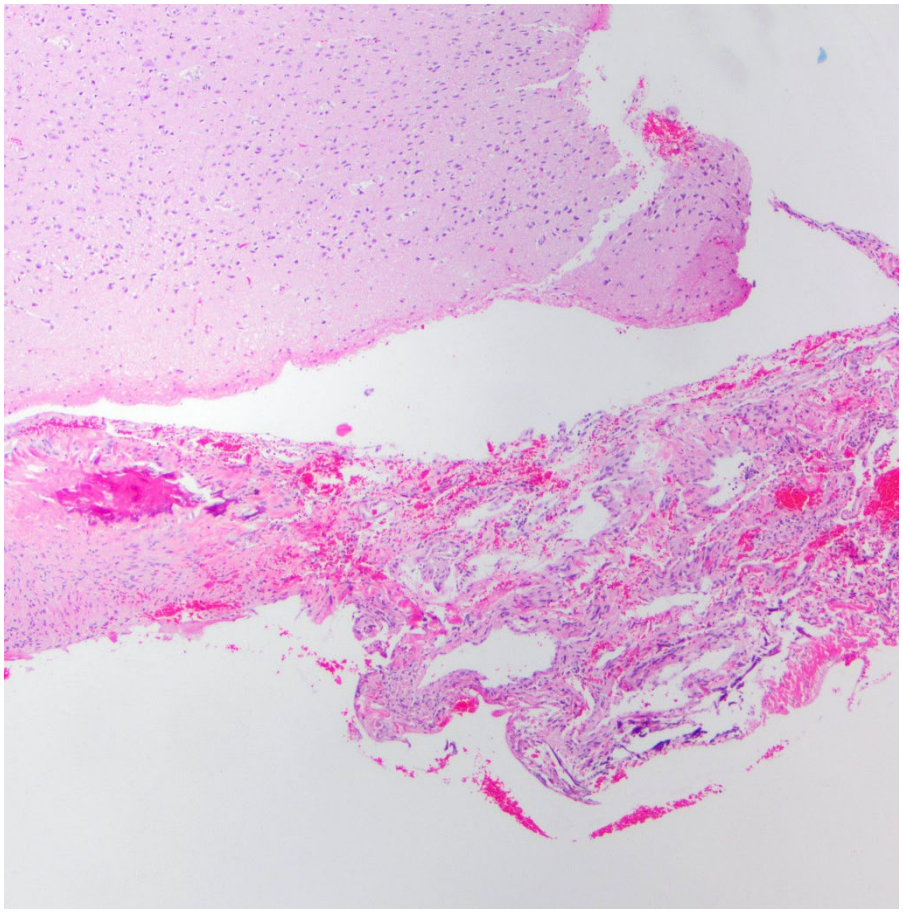
CASE 8

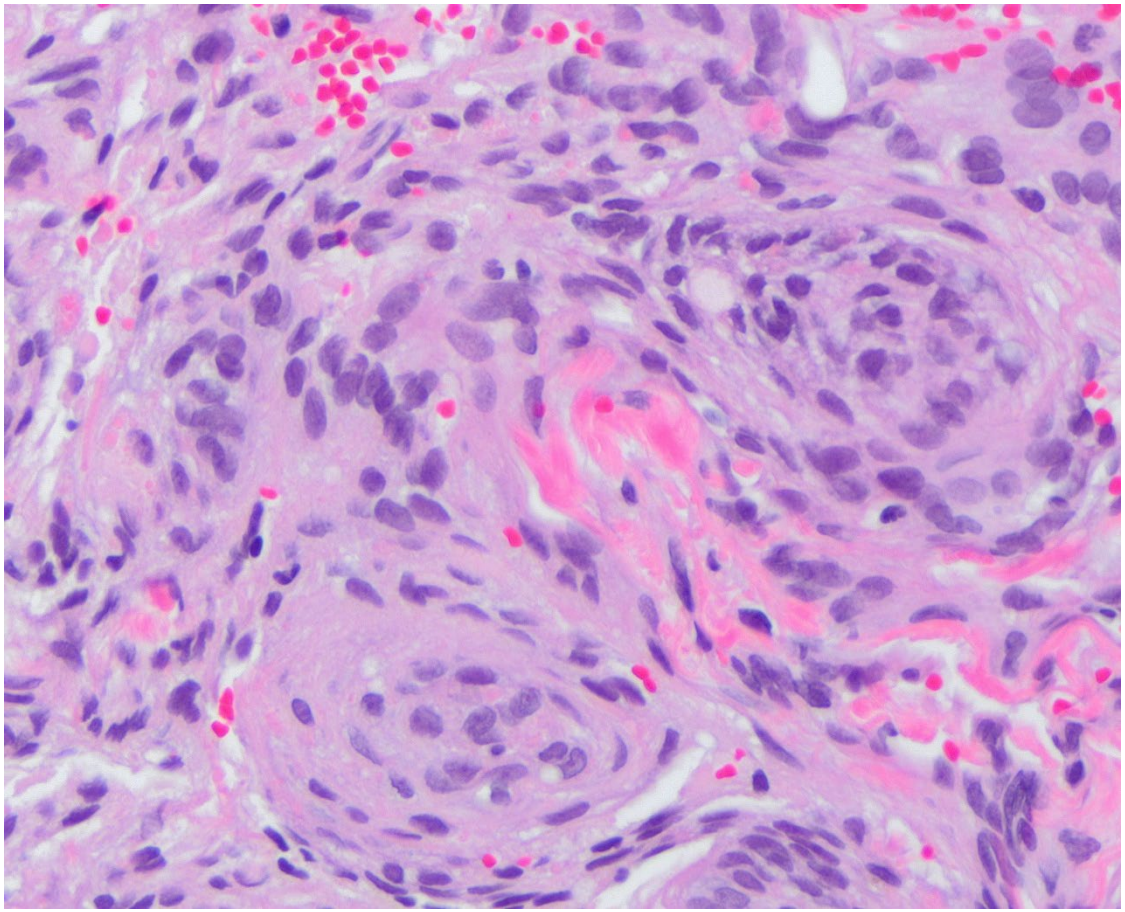
13-year-old male neutered Siamese cat

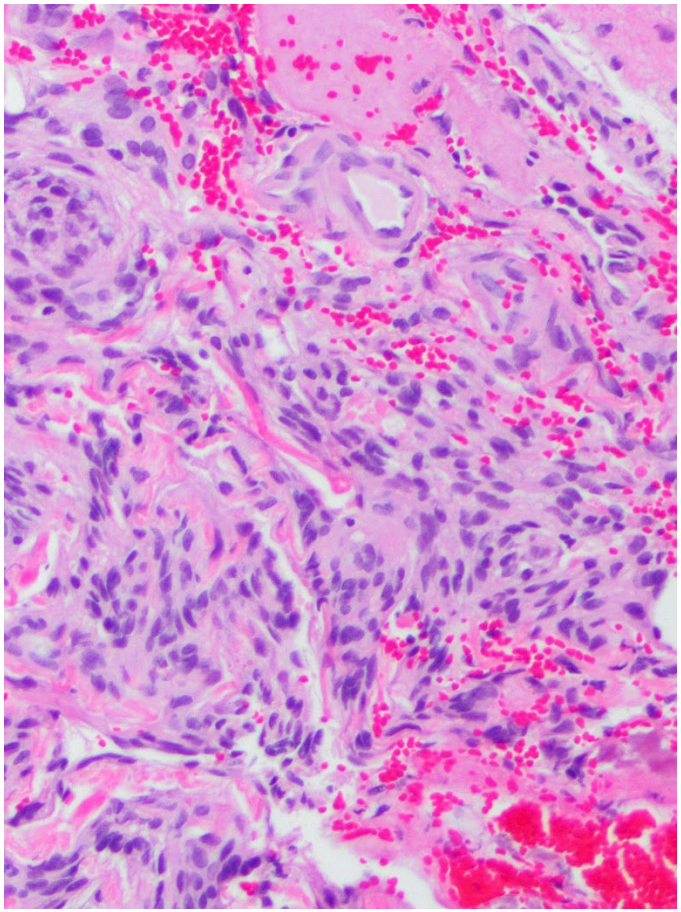
- Cat with behavior changes and lethargy, pacing gait, reduced menace reflex, abnormal physiological nystagmus, and seizures.
- A large occipital mass on the right occipital area with perilesional edema.
- Craniotomy performed and submitted a mass for histopathology.

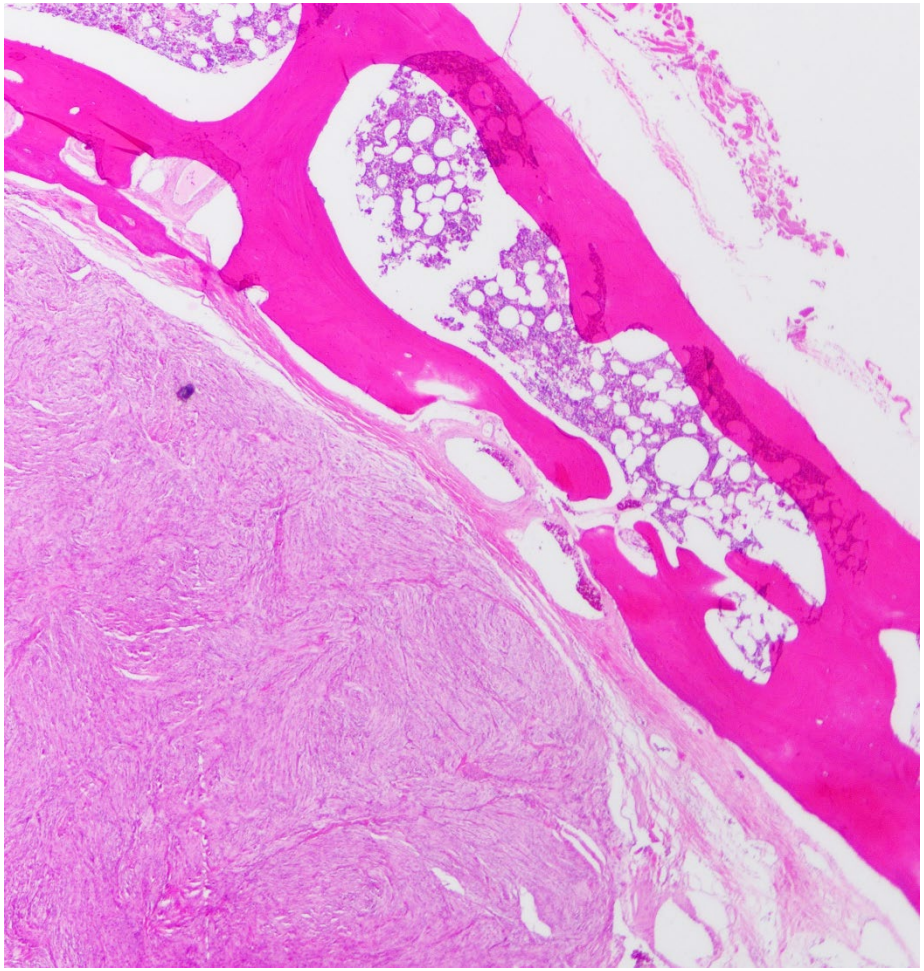
Biopsy

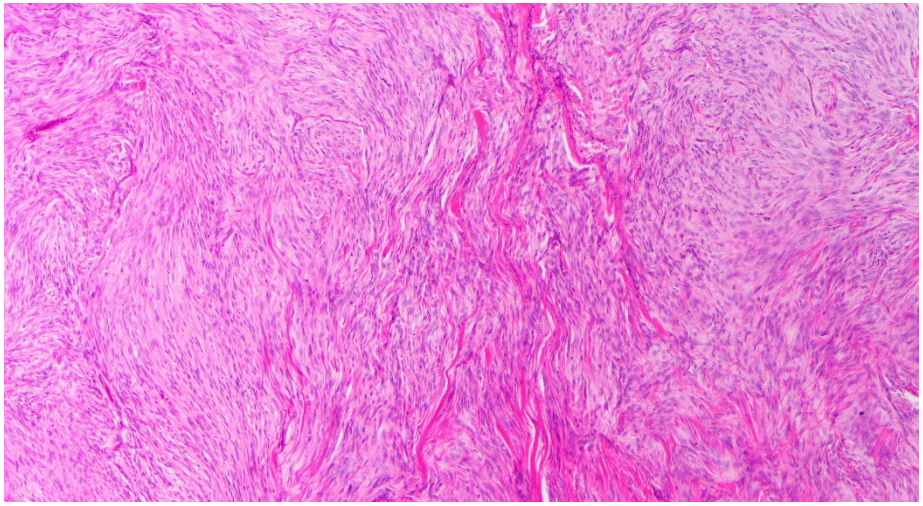


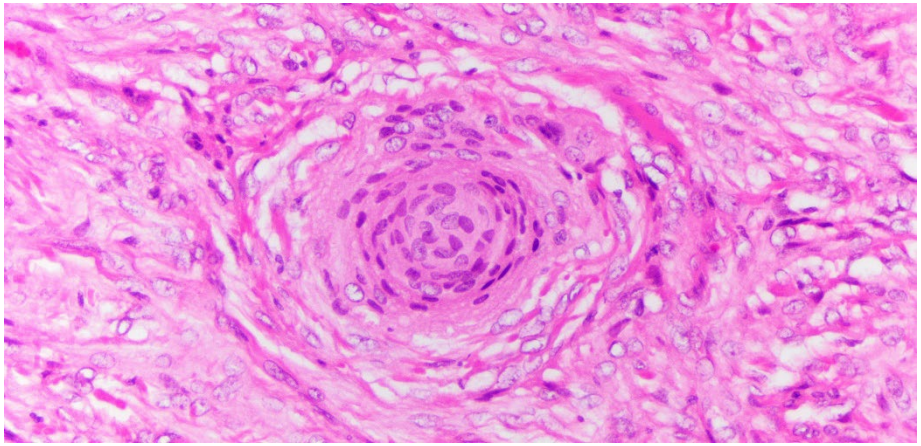












Meningioma, grade I

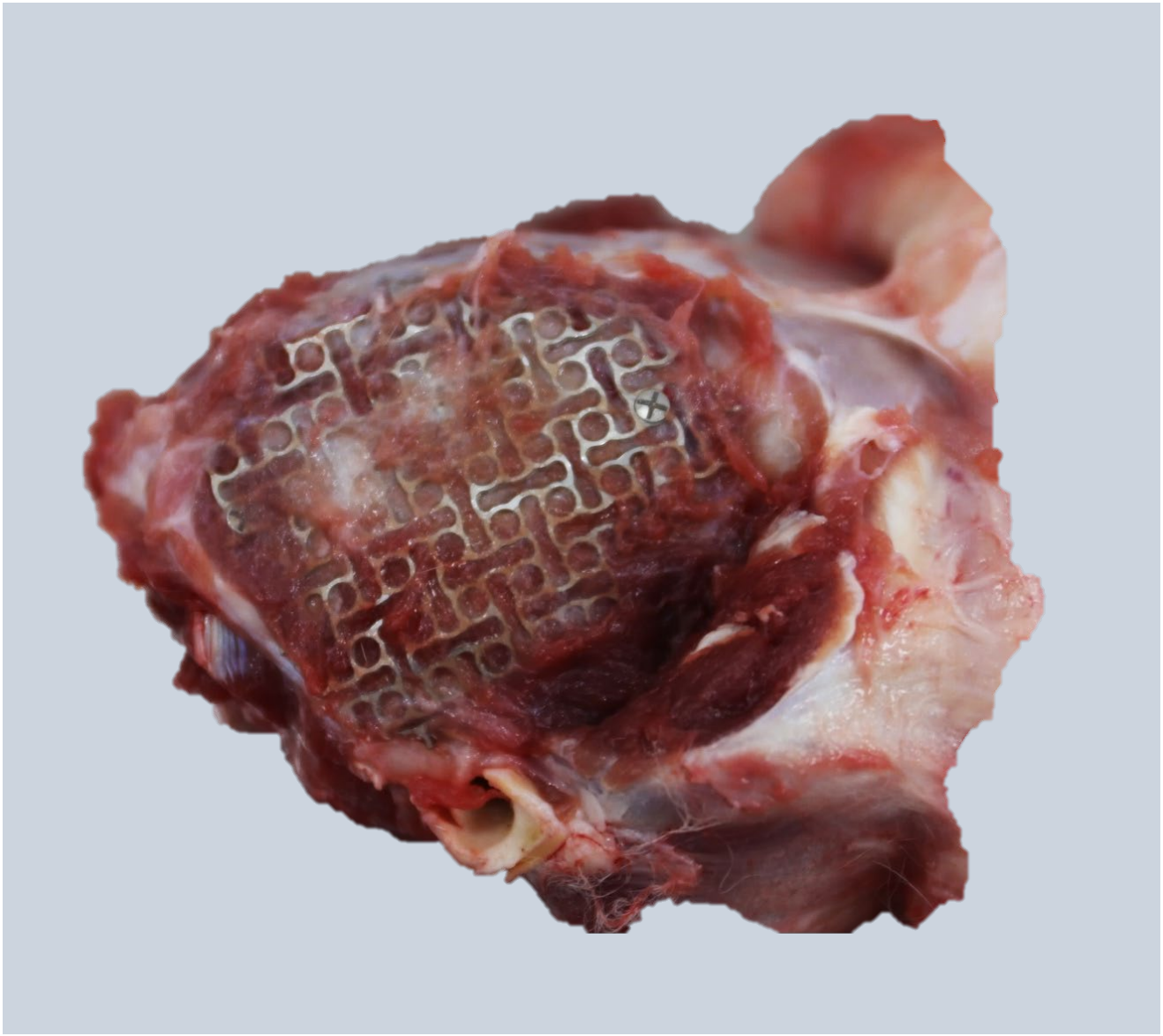
No further seizures, no neuro deficits at follow-up

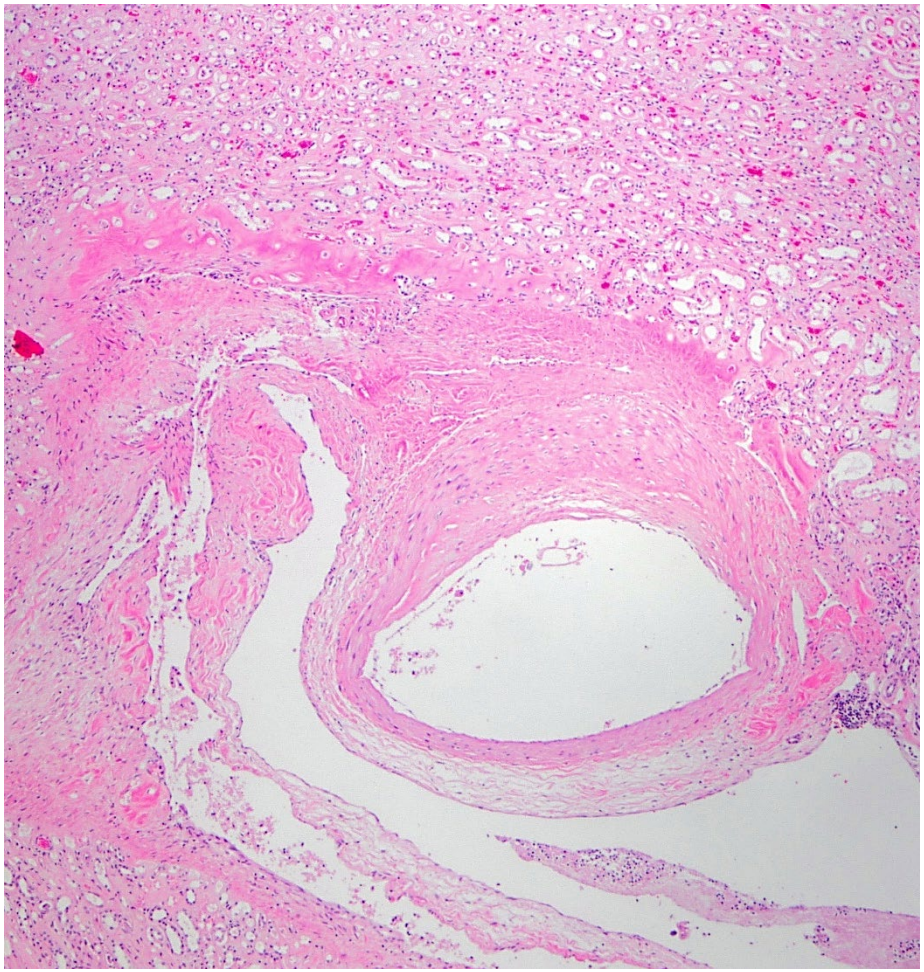
One year after the surgery.....

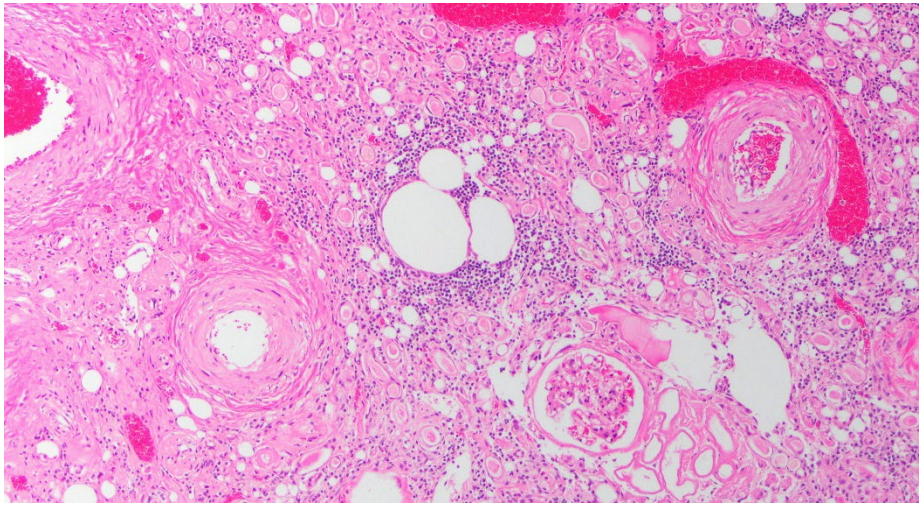
- Presented in status epilepticus
- Treated with midazolam and Keppra. Status resolved, no further seizures in hospital.
- Continued to have automatisms and intermittent opisthotonus.
- Glaucoma OS apparent at presentation.

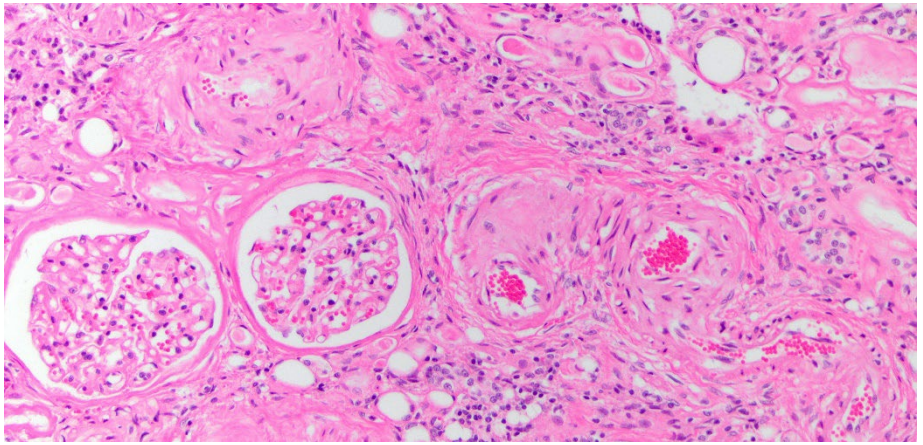
Elected for humane euthanasia due to limited finances and guarded to poor prognosis.

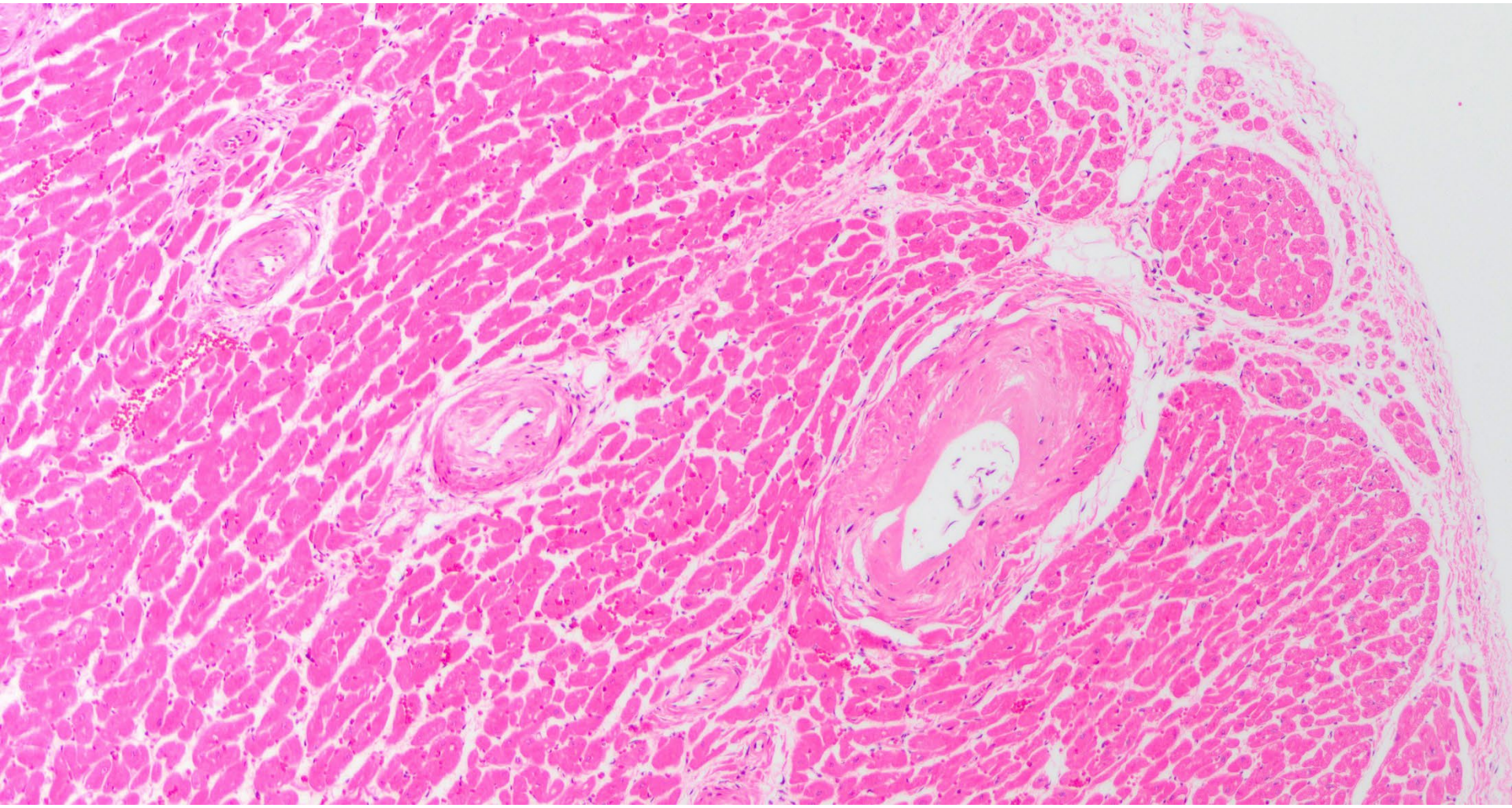
Clinical diagnoses/differentials:
Tumor regrowth vs vascular event vs infectious/inflammatory disease

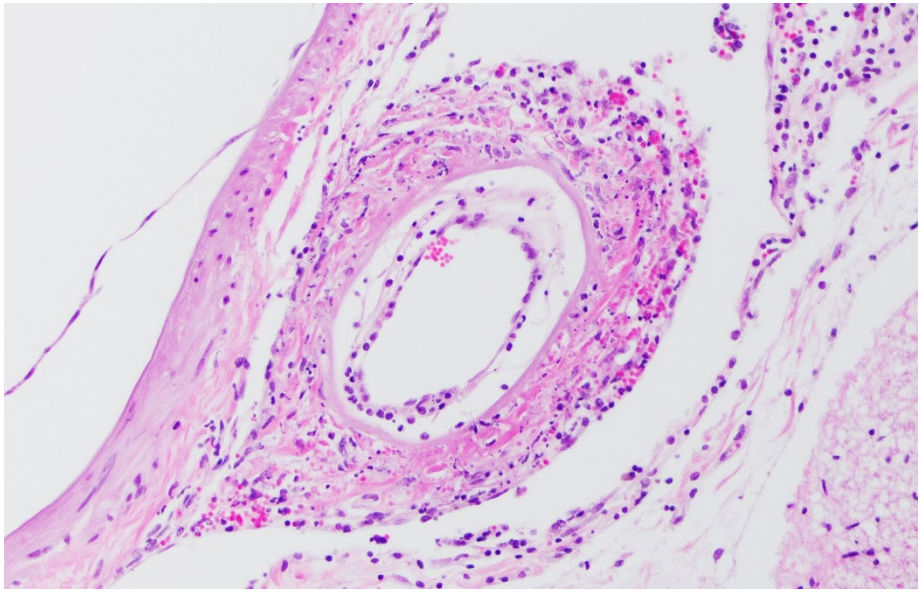


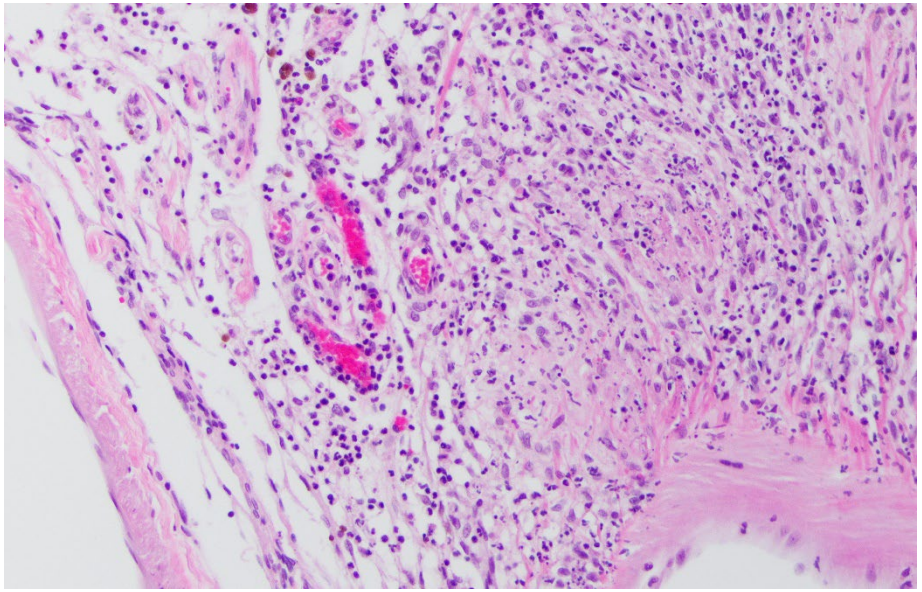


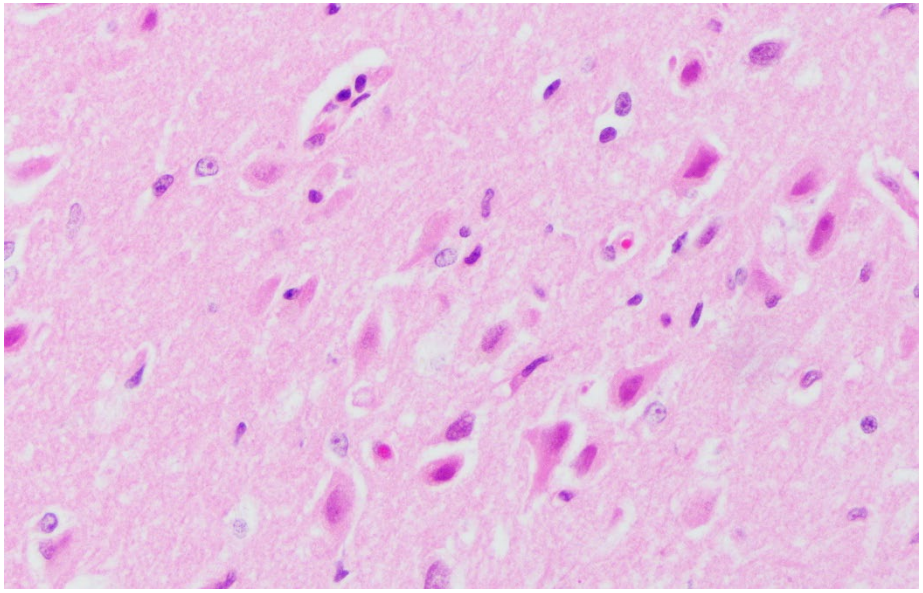


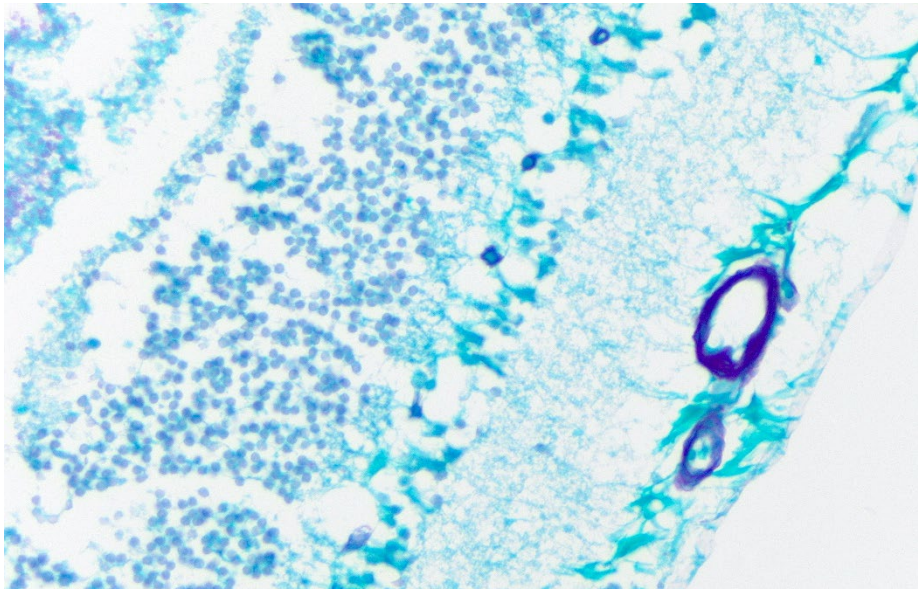


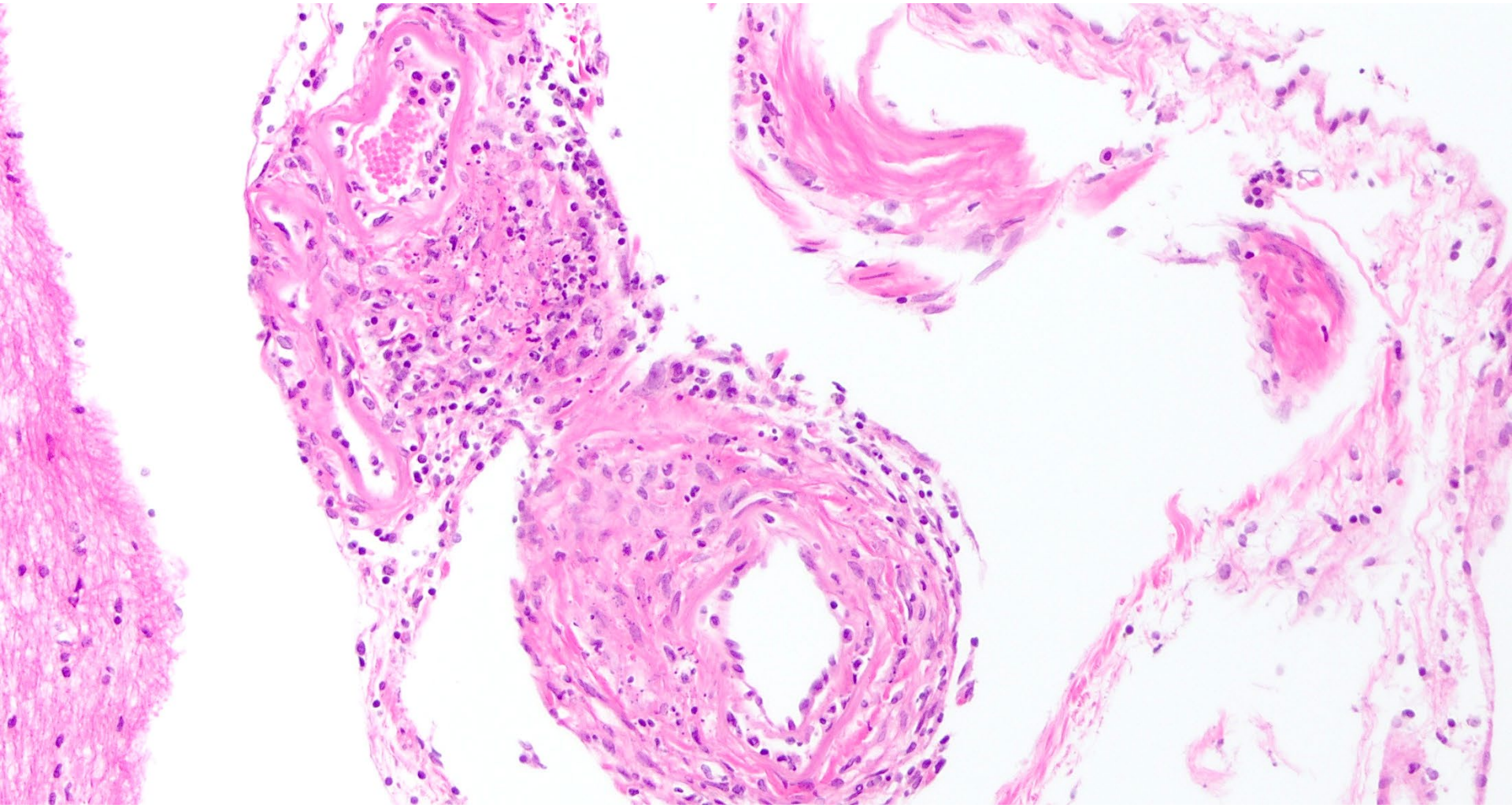












Hypertensive encephalopathy

The brain lesions indicate hypertensive encephalopathy, a condition observed in cats with chronic renal disease or any other condition leading to hypertension.

In this case, the cat had chronic renal disease, chronic renal infarcts, thickening of the interlobar arteries, and choroidal and retinal vascular hyalinization. Additionally, the left ventricle showed myocardial interstitial fibrosis and thickening of some intramural coronary arteries. These changes collectively indicate systemic hypertension in this cat.

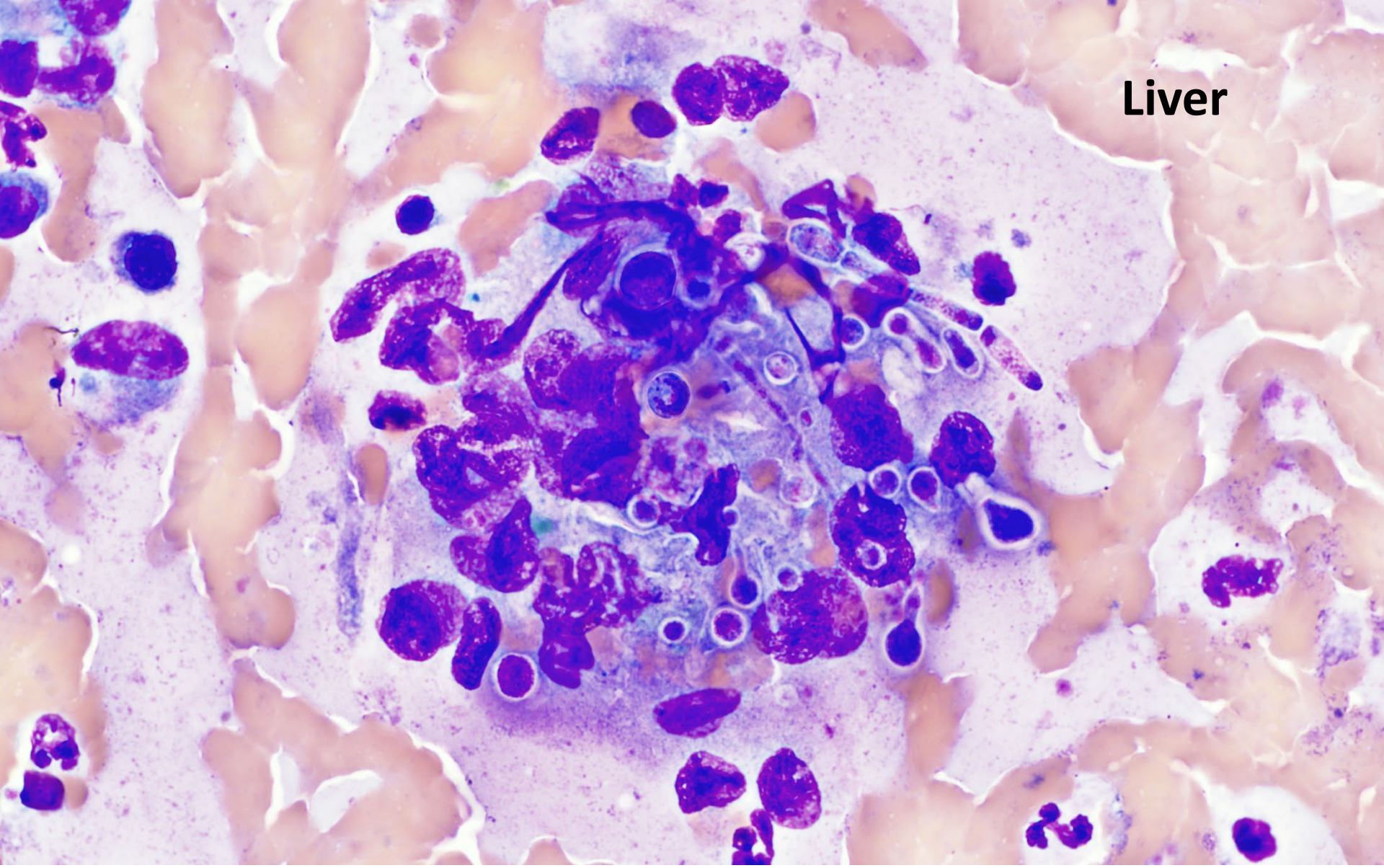
CASE 9

3-year-old, female, spayed, Giant Schnauzer

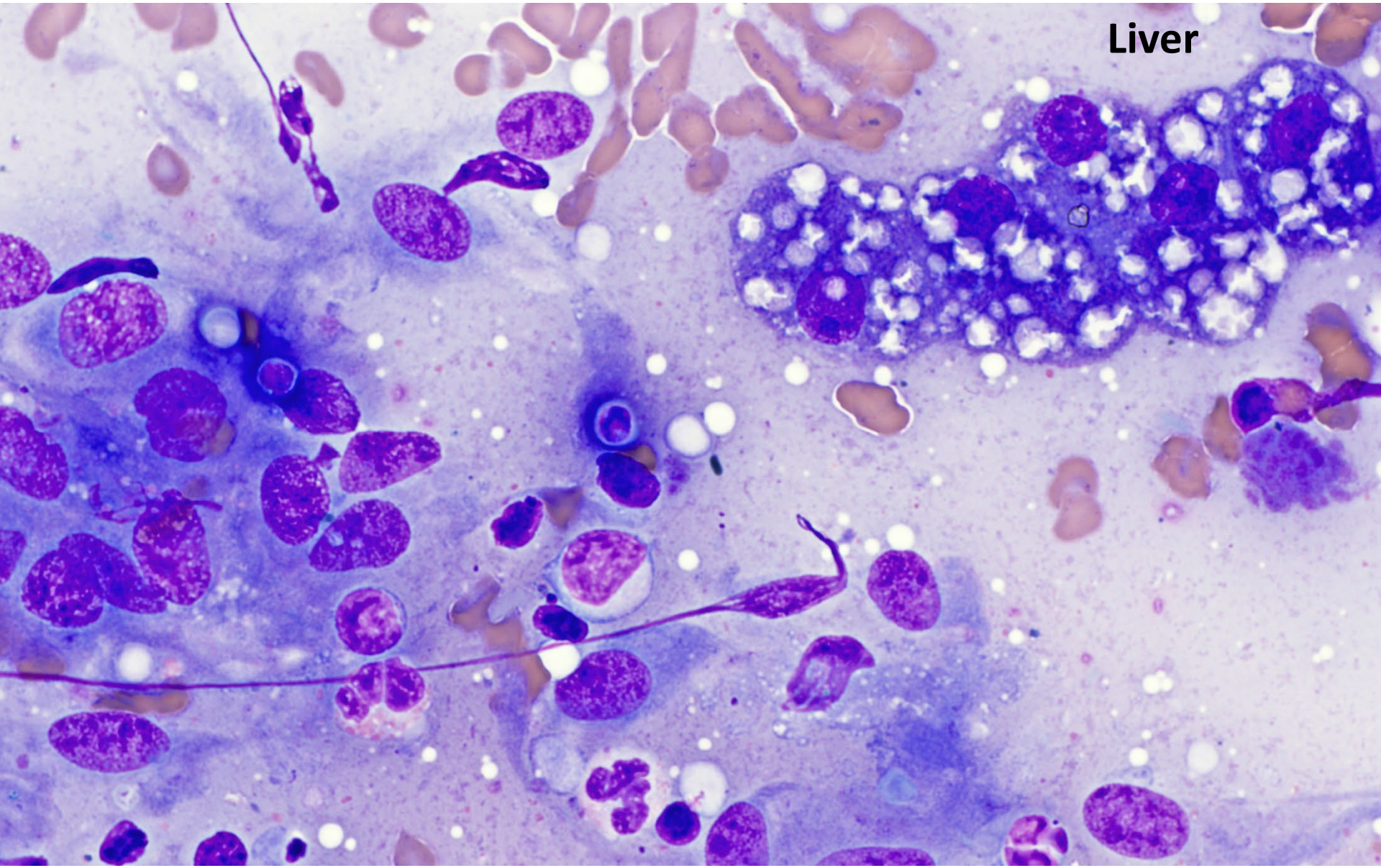
Inappetence and lethargy
PE: tense, uncomfortable abdomen
Ultrasound:
Hepatobiliary: Liver was diffusely enlarged, rounded, hypoechoic and had heterogenous echotexture.
Spleen: Diffusely enlarged, rounded, with heterogenous echotexture and numerous hypoechoic foci.
Lymph nodes: There was a single portal lymph node that was moderately enlarged and hypoechoic. A medial iliac lymph node was markedly enlarged, measuring 0.9 cm in thickness.

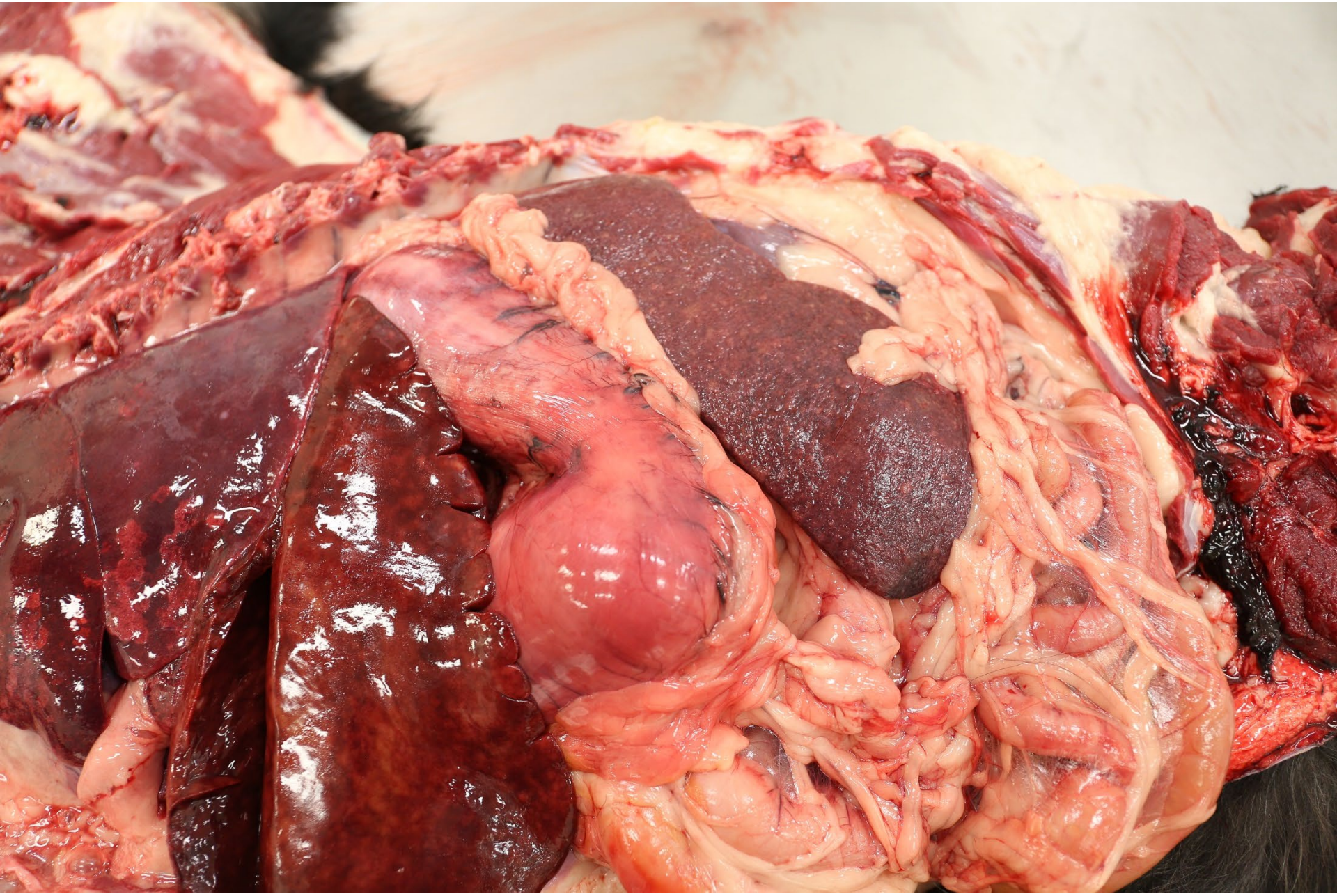
Cytology from the liver and spleen.

Candida PCR, Systemic Mycosis PCR - all negative

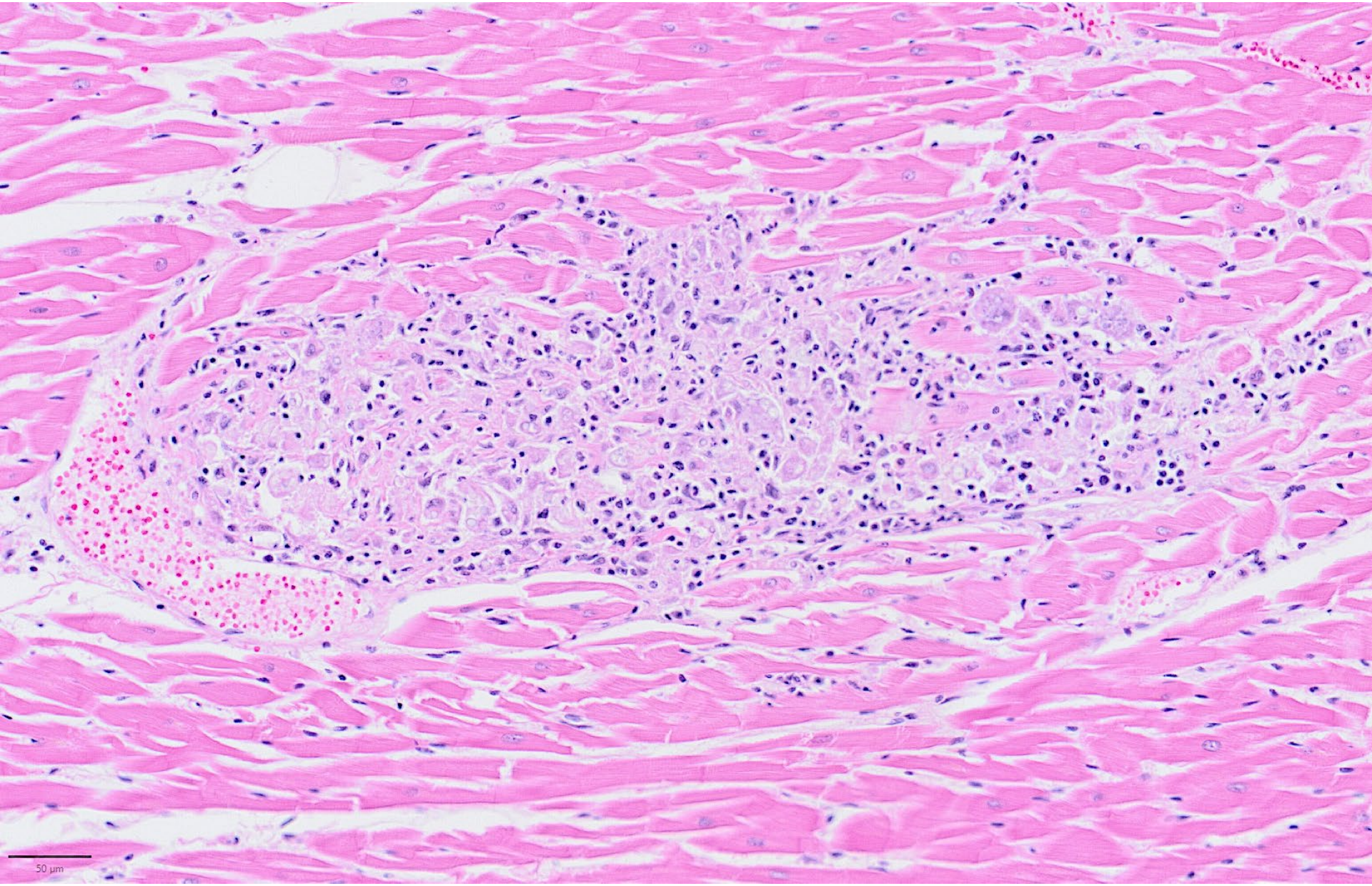


Yeast-like forms predominate, and these are round or oval structures, measuring approximately 2.5-8.0 um in diameter, with a purple-magenta, granular internals structure, and a clear, small, outer capsule. Variably longed hyphae-like structures are also seen, occasionally septated, measuring approximately 2.0-4.0 um in width with parallel walls and a thin clear capsule and a variably basophilic, finely stippled internal structure. Narrow-based budding is sometimes seen.

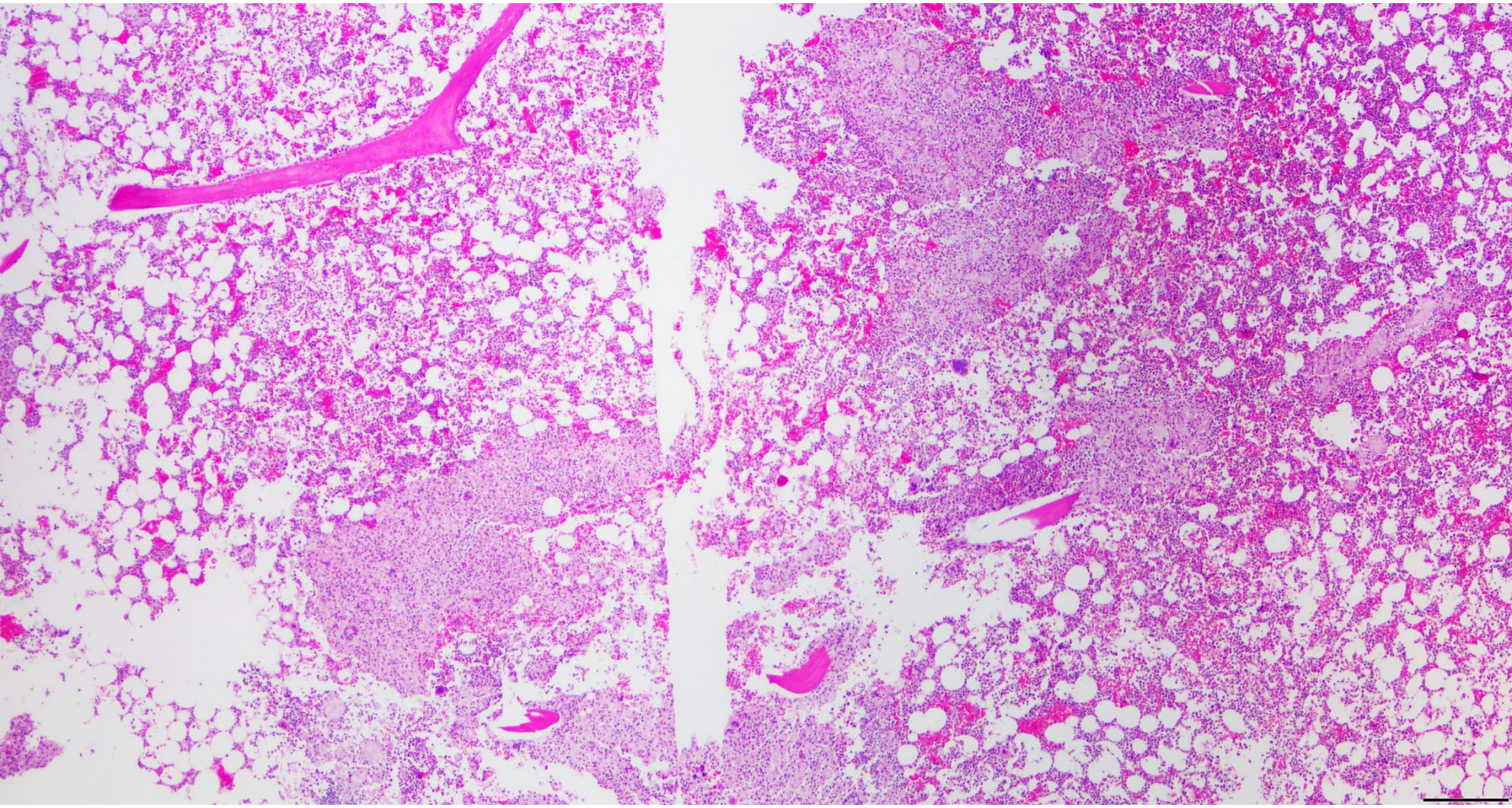

Liver



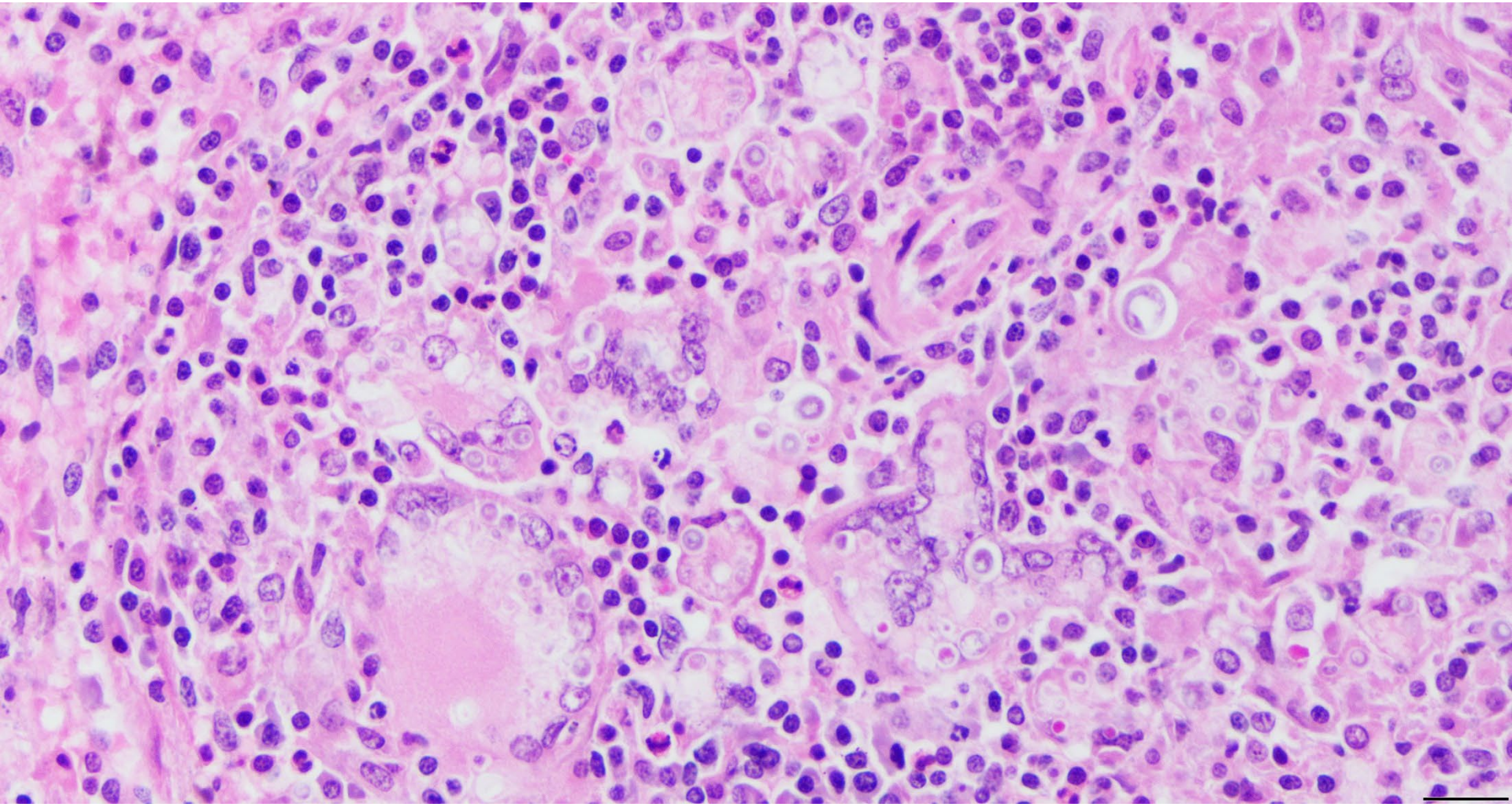
Heart



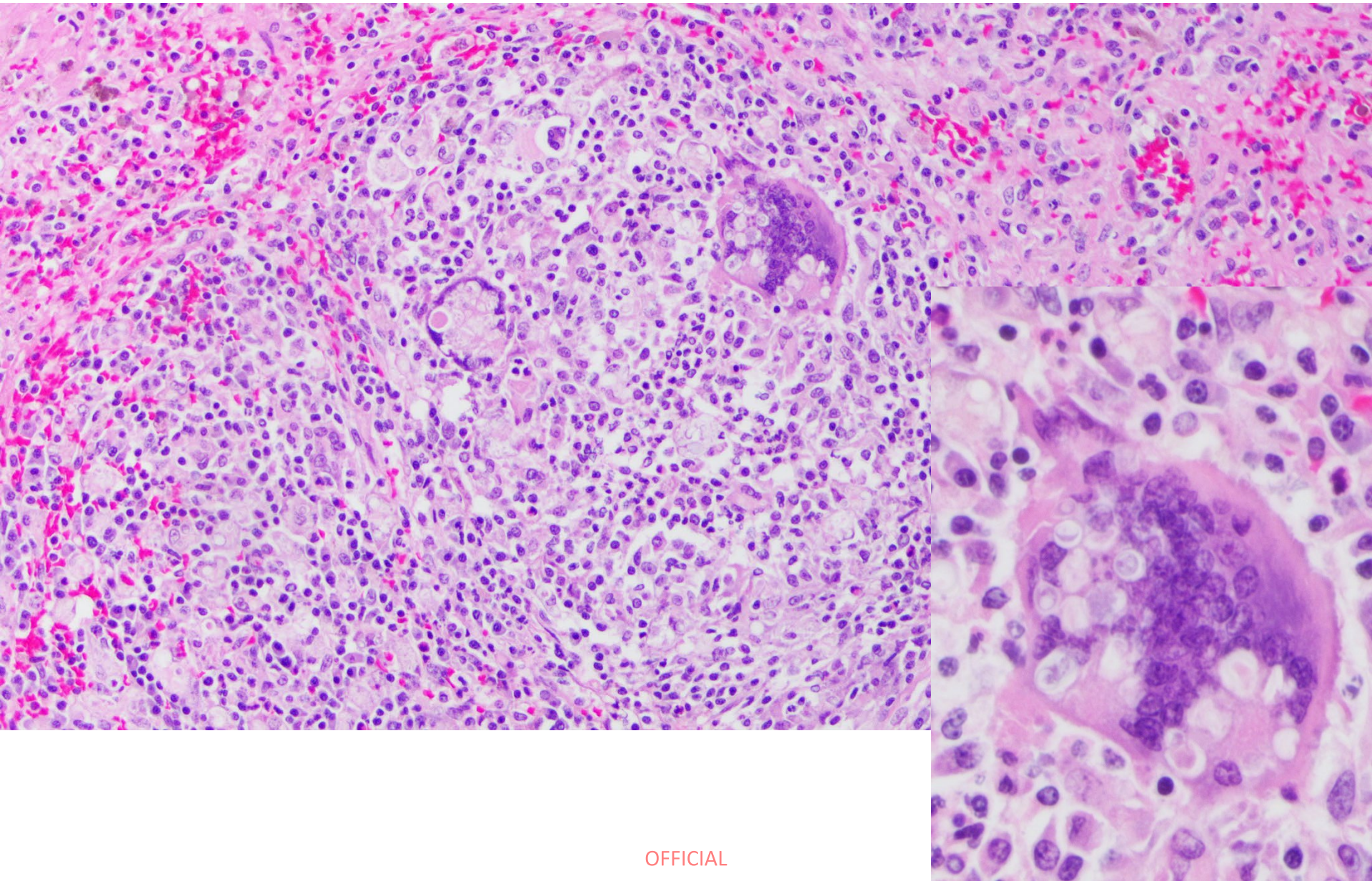
Bone marrow



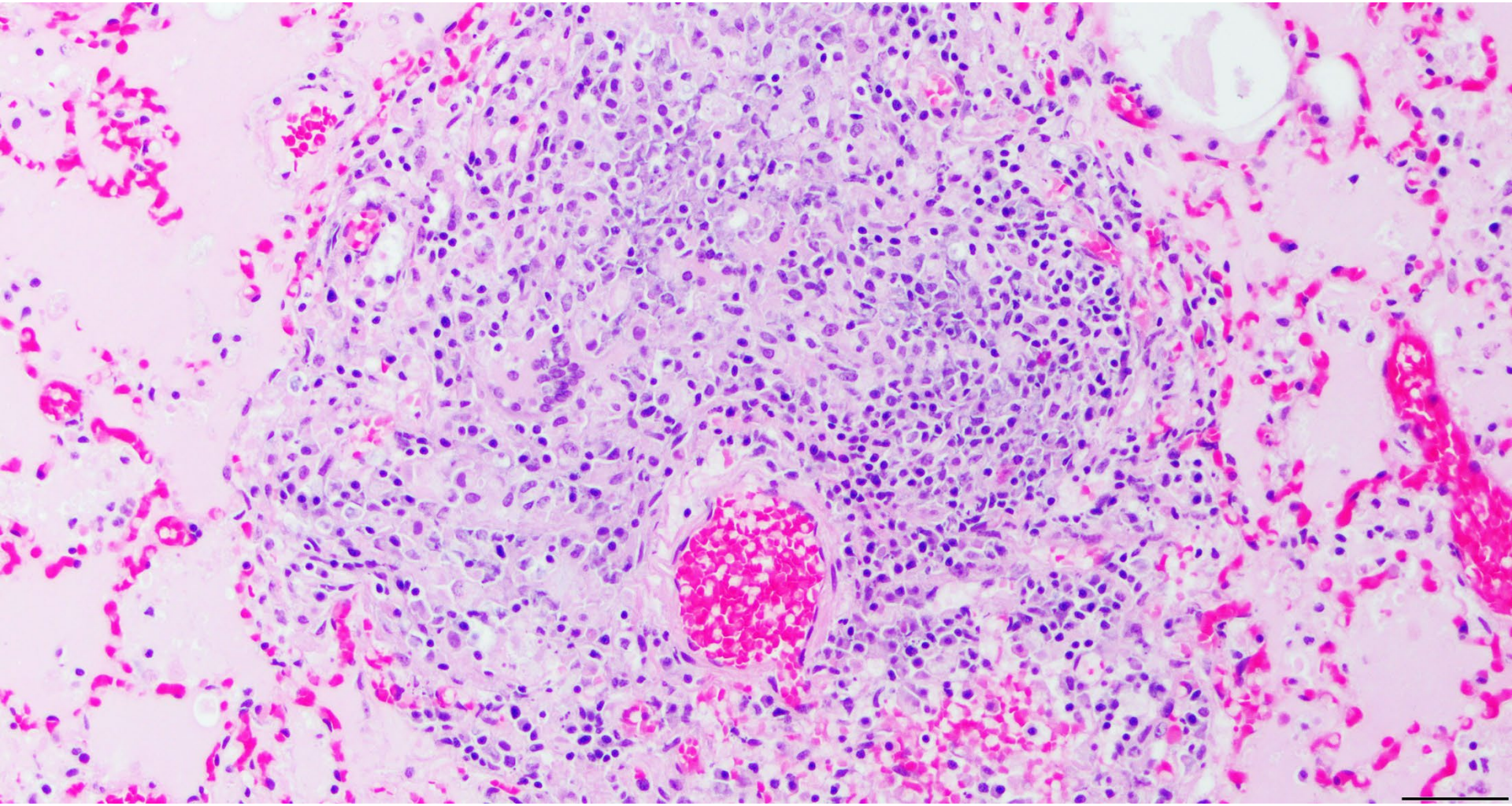
Spleen

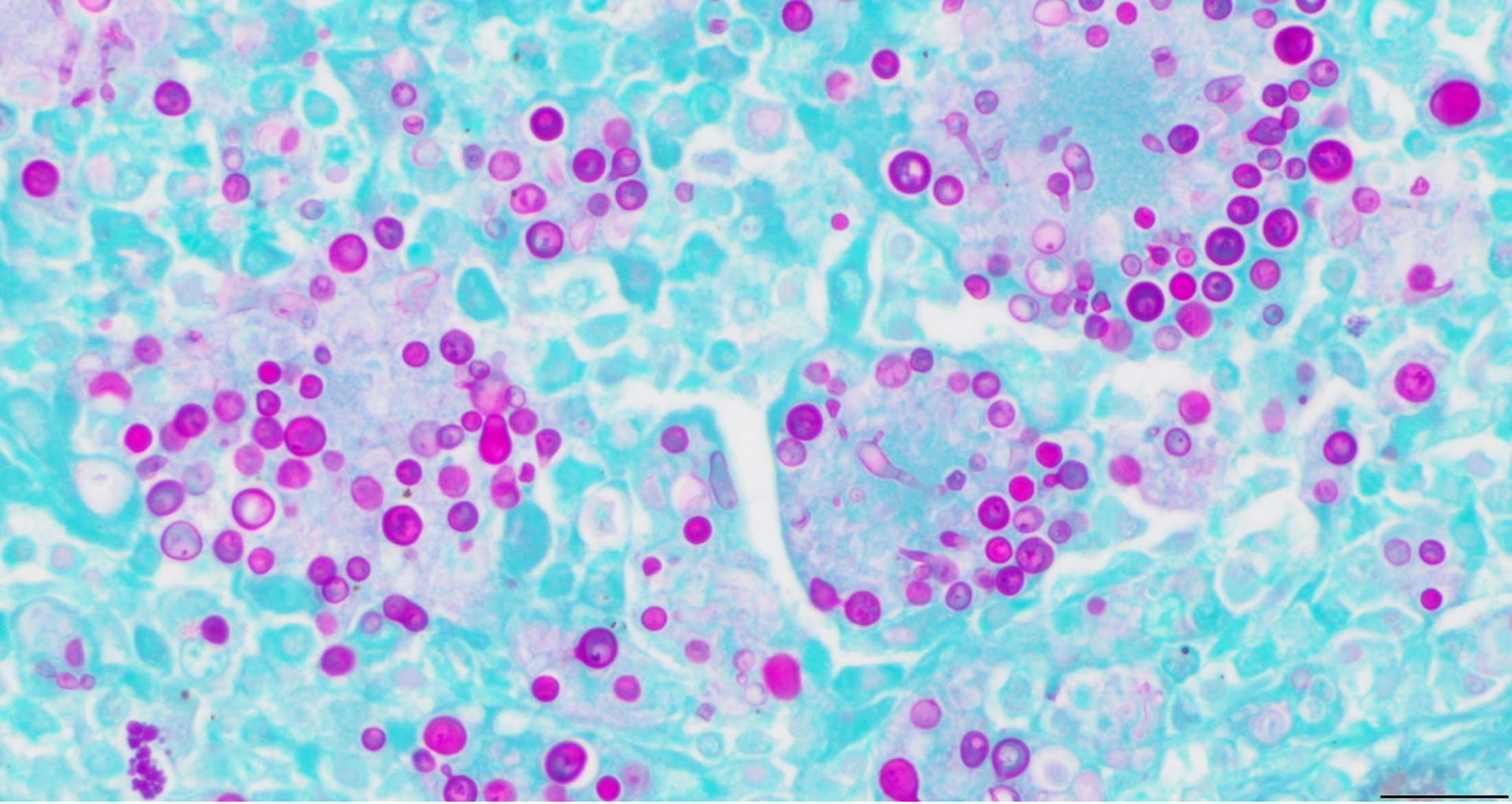


Spleen

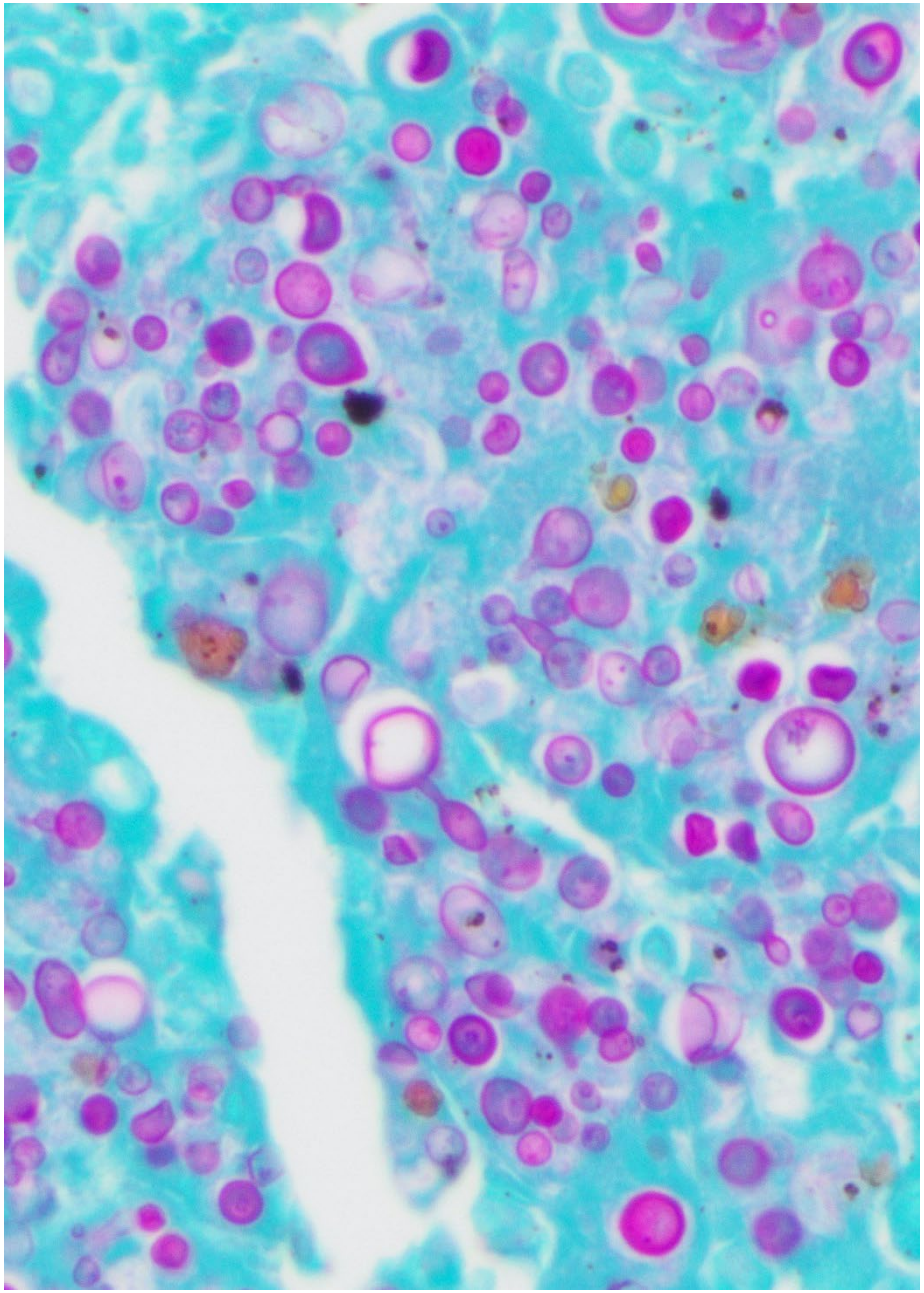


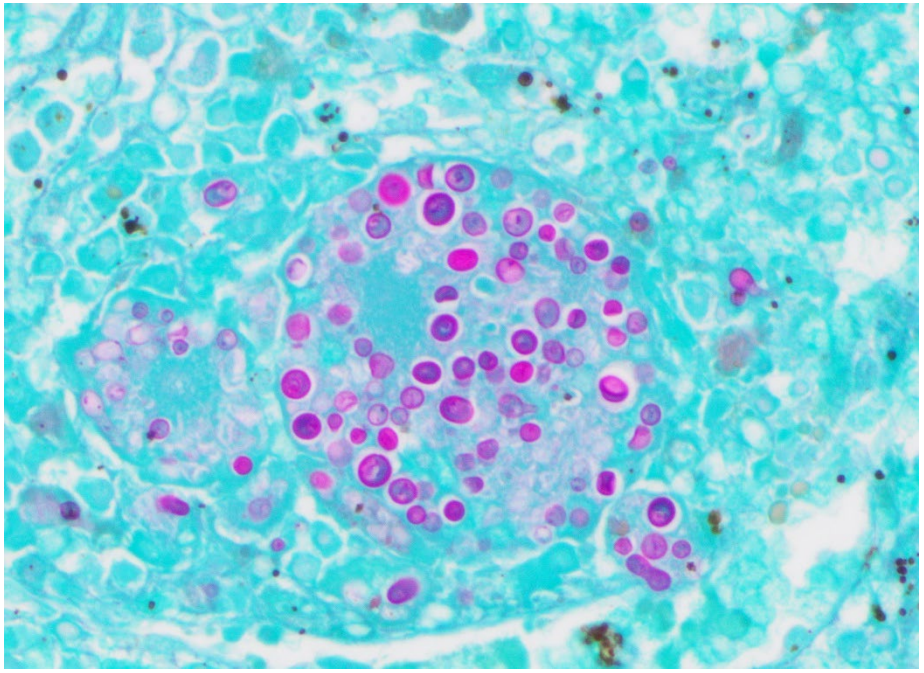
Lung

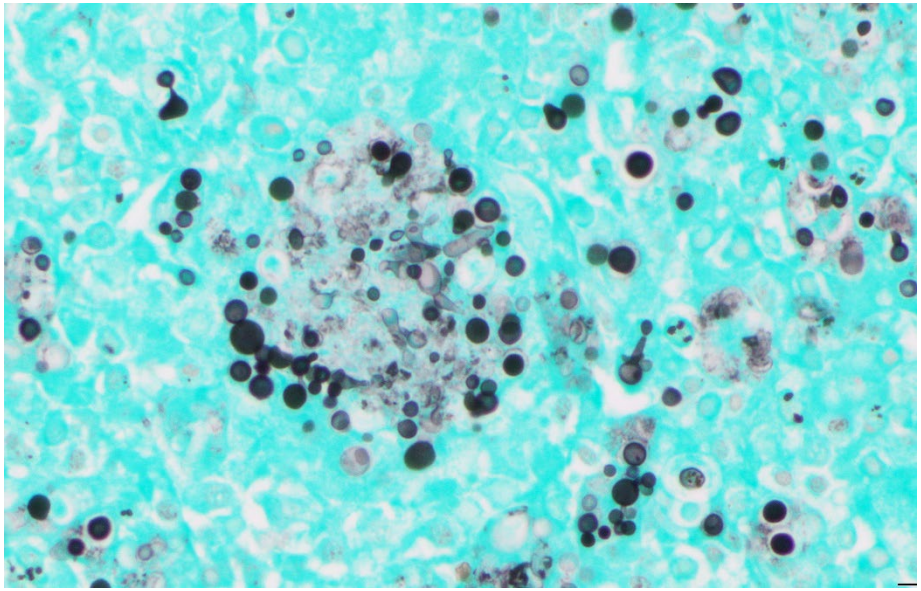




Within the cytoplasm of the macrophages and multinucleated giant cells are numerous globose, oval, cylindrical or ellipsoidal, smooth-walled, and hyaline conidia that measure 2.5 um to 12 um in diameter. Some of these conidia have a pale granular core. There are few 1.7 um-2.1 um in width, short fungal structures with a 4 um-7 um in diameter terminal bulbous swelling.







Disseminated hyalohyphomycosis

The morphology of the conidia and fungal hyphae is suggestive of hyalophomycosis, a term referring to local or disseminated granulomatous disease caused by opportunistic, non-pigmented, hyphal fungal organisms.

Spleen was submitted for fungal culture, which identified *Paecylomyces* spp.

Paecilomyces is one of several causes of hyalohyphomycosis.

Paecilomyces spp. are members of anamorphic fungi classified under the phylum Ascomycota that are commonly found in the soil, air, and decaying food. Paecilomycosis has been reported in veterinary medicine, with a clinical presentation that varies from local disease to systemic infection.

Acknowledgments Thank you for all the photos!

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Teporingo
Volcano rabbit