

Necropsy Detail

Animal Type	GAN	Preferred ID	Taxonomy	Sex	Birth Date	Age
Individual	MIG12-28327256	M02028	Canis lupus baileyi/Mexican wolf	Male	09/May/2002	14Y 4M 10D

Submission *Marrow "Phoenix" SB # 769*

Death Date	19/Sep/2016 00:00	Carcass Weight	
Date Submitted	19/Sep/2016	Measurement	29.1 kilogram
Date Discovered	19/Sep/2016	Estimate	No
Submitted By	Judilee Marrow	Exclude from reference intervals	No
Manner of Death	Euthanasia, medical	Death Location	

Recent History/Observations Note
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Special Request
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Case Info

Pathology Case Number	~	Death Numbers		
Parties to get copy of final report	~	Death Number	Effective Date	Entered By
Responsible Pathologist	Dalen Agnew	~	~	~
Responsible Resident	~			

Workflow Notes and Additional Case Comments
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Gross Necropsy

Necropsy Info			
Necropsy Date	19/Sep/2016	Necropsy Prosector	Judilee Marrow
Carcass Condition Code	Fresh	Additional Staff	~
My Institution	HOSPITAL		
Reference Number	~		

Report**Report Written Date**

19/Sep/2016

Necropsy Report/Description

GENERAL CONDITION: (Nutritional condition, physical condition) **NEONATES:** Examine for malformations (cleft palate, deformed limbs, etc.)

Thin body condition with reduced (but not emaciated) fat stores and some muscle wasting.

SKIN: (Including pinna, feet)

The coat is sparse and thin. No ectoparasites noted. No bruising noted on the skin externally but there were several areas of hemorrhage under the skin consistent with where injections were given. Very slight areas of alopecia at the ear tips consistent with fly bites but no open sores. Foot pads within normal but long nails noted.

MUSCULOSKELETAL SYSTEM: (Bones, joints, muscles)

All bones within normal limits. There is crepitus in the left carpus and some enthesophyte formation there. There is also some thickening of the left hip joint noted. (Not all joints were opened to preserve skeletal anatomy for UNM).

BODY CAVITIES: (Fat stores, abnormal fluids) **NEONATES:** Assess hydration (tissue moistness)

Fat stores appear slightly reduced compared to what would be expected in this animal. Hydration status adequate.

HEMOLYMPHATIC: (Spleen, lymph nodes, thymus)

Spleen is grossly distended (consistent with pentobarbital euthanasia). Mesenteric lymph nodes were prominent but no gross abnormalities were noted.

Thymus not identifiable (as this is a geriatric animal).

RESPIRATORY SYSTEM: (Nasal cavity, larynx, trachea, lungs, regional lymph nodes)

Nasal cavity is visually within normal limits. No evidence of nasal masses noted. Oral cavity, larynx and trachea grossly normal. The lungs are visually normal but there are several areas of increased density palpable at the periphery of the lung lobes. Regional lymph nodes wnl.

CARDIOVASCULAR SYSTEM: (Heart, pericardium, great vessels)

Heart has slightly reduced fat stores present in the pericardium and around the heart. The mitral valve is notably thickened on palpation. The rest of the heart and great vessels were grossly normal.

DIGESTIVE SYSTEM: (Mouth, teeth, esophagus, stomach, intestines, liver, pancreas, mesenteric lymph nodes)

The teeth show significant wear but there are no tooth fractures, gingivitis, and minimal dental tartar. The tongue and esophagus wnl. The liver has multiple large well defined to less defined masses concentrated at the base (the tips of the lobes visibly appear normal). Some nodules are small (2-4 mm) while the larger ones are 10x5 cm and 8 cm in diameter. Lobes effected include the right lateral and middle lobes, the left middle and lateral lobes. No gross lesions noted in the caudate lobe or quadrate lobes. The mass in the left lateral lobe was relatively well demarcated, surrounded the main vasculature and was firm in texture. The right medial lobe has a large relatively poorly demarcated mass that has a soft and friable texture. The pancreas has a nodular appearance with firm nodules throughout. The small intestine, cecum and large intestine appeared wnl. The proximal jejunum had some teleniectasia. The mesenteric lymph nodes were prominent but otherwise appeared normal.

URINARY SYSTEM: (Kidneys, ureters, urinary bladder, urethra)

Kidneys, ureters, urinary bladder and urethra were all grossly normal.

REPRODUCTIVE SYSTEM: (Testis/ovary, uterus, vagina, penis, prepuce, prostate, mammary glands, placenta)

The left testicle has a small firm, tan mass within the parenchyma. The right testicle was grossly normal. The prostate was prominent (consistent with age) but grossly normal.

ENDOCRINE SYSTEM: (Adrenals, thyroid, parathyroids, pituitary)

The adrenal glands were grossly normal. The thyroid and parathyroid glands were also grossly normal. The pituitary gland was also grossly normal.

NERVOUS SYSTEM: (Brain, spinal cord, peripheral nerves)

The brain appeared grossly normal on external exam, but on cut surface there was a dark discoloration in the right cranial cerebrum. No abnormalities were grossly apparent in the limited spinal cord examination or in the peripheral nerves.

SENSORY ORGANS: (Eyes, ears)

Ears wnl. Both eyes have some blue hue in the lens bilaterally.

Gross / Preliminary Diagnosis**Diagnoses**

Diagnosis	Standardized Diagnosis
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Initial Necropsy Comments & Interpretation

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Samples & Tests**Samples**

Sample Type/Anatomical Source	Preservative			
Tissue/~	Formalin, 10% buffered			
Laboratory	Test Name	Result	Evaluation	Status
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Measurements**Organ Weights & Lengths**

Measurement Date/Time	Type	Measurement Item	Measurement Value	Measured By
~	~	~	~	~

Histopathology**Tissue Processing**

Tissue Trim Date	~
Trimmed By	~
Tissue Processing Submission Date	~
Tissue Processed Completion Date	~
External Laboratory	DCPAH
Reference Number	SP-16-0010464

Histopathology Info

Histopathology Report Date	19/Oct/2016
Histopathology Report By	Dalen Agnew
Responsible Pathologist	Dalen Agnew

Histopathology Report**Microscopic Description**

Examined are sections of right adrenal gland (block 1), left adrenal gland (2), lymph node, thyroid (3), brain, pituitary (4), brain (-8), lymph nodes (9), eye (10), testicles (11-12), kidney (13), spleen, liver (14), stomach, lung (15), lung, liver (16), heart, (17-18), skin, trachea (19), esophagus, intestine (20), bone marrow (21), lung, pancreas (22), stomach, intestine (23), prostate (24), intestine (25), skeletal muscle, urinary bladder, intestine (26), heart, and tongue (27).

In the adrenal glands, there were multiple small nodular masses of cortical cells within and just peripheral to the capsule (nodular hyperplasia). In the brain, there were diffusely scattered basophilic spherical bodies 5-10 um in diameter; thickened arterioles, and increased glial cells and satellitosis around many neurons throughout the brain.

In some lymph nodes, there is increased lymphocyte density and follicular hyperplasia, as well as increased lymphocytes within the capsule and in the surrounding adventitia.

In both testicles, there is scant numbers of small spermatogonia along the wrinkled and shrunken basement membrane intermixed with densely packed Sertoli cells. No sperm are present in the vas deferens or the epididymis. In the prostate gland, there are increased numbers of glands and at the periphery, there are multiple arteries and arterioles with marked infiltration of macrophages, lymphocytes, and some neutrophils. There is edema and some fibrin deposition in the wall, with fibrin thrombi obstructing the lumen.

In the kidney, there are multifocal scattered foci of lymphocytes and plasma cells in the interstitium. In the liver, there are multiple discrete expansive nodules of hepatocytes which have increased vacuolation of the cytoplasm (with glycogen) and severe segmental congestion of the adjacent hepatocytes. There is increased numbers of neutrophils in circulation. In the spleen, there is a discrete hemosiderotic plaque on the capsule. There is also extensive extramedullary hematopoiesis.

In the lung, there are multiple osseous nodules scattered in the lung parenchyma. At the bronchiolar margins, there are nodular aggregates of macrophages laden with brown and often refractile granular material. In the heart, there are multiple arterioles with thickened and hyalinized walls.

In the stomach, there are scattered small numbers of short spiral bacteria (10-20 um in length) within the glands. In the intestine, there are segmental and expansive regions of increased numbers of lymphocytes, plasma cells, and eosinophils within the tips and separating glands.

Histopathology Diagnosis

Diagnosis	Standardized Diagnosis
Liver: Moderate multifocal hyperplastic nodules; multifocal severe vacuolar degeneration	Liver, Hyperplasia, Degeneration
Intestine: Moderate multifocal chronic enteritis	GASTRO-INTESTINAL TRACT, Chronic enteritis
Prostate: Severe multifocal chronic active vasculitis with thrombosis	Prostate, Vasculitis
Brain, Heart: Moderate multifocal arteriosclerosis	Arteriosclerosis
Brain: Moderate multifocal gliosis	Brain, Gliosis
Kidney: Mild multifocal lymphoplasmacytic interstitial nephritis	Chronic interstitial nephritis
Lung: Multifocal osseous metaplasia; moderate anthracosis	~
Stomach: Spiral bacteriosis (Helicobacter)	STOMACH, Bacteria, Helicobacter sp.
Testicles: Aspermatogenesis	Aspermatogenesis

Finalize

Finalization Date 20/Oct/2016
Relevant Death Info Chronic disease
Primary Body System Affected Digestive (including liver)
Responsible Pathologist Dalen Agnew
Responsible Resident ~

Significant contributors to death

Diagnosis	Standardized Diagnosis
Intestine: Moderate multifocal chronic enteritis	Chronic enteritis, GASTRO-INTESTINAL TRACT
Liver: Moderate multifocal hyperplastic nodules; multifocal severe vacuolar degeneration	Degeneration, Hyperplasia, Liver

Final Summary

Comment: The nodular changes in the liver did not appear to be neoplastic, but rather hyperplastic, with the nodules having portal tracts, central veins, and sinusoids (albeit dilated and congested). There were significant degenerative changes in the liver which likely led to some degree of dysfunction. There was also chronic enteritis and cystic degeneration of the gall bladder which together with the liver changes may have led to metabolic derangements and declining quality of life. Cerebral gliosis is a common manifestation of metabolic damage to the CNS. The changes in the prostatic vessels is interesting and unique in my experience. They are suggestive of a "polyarteritis-like" condition or even an immune-mediated disease like Wegener's syndrome seen in humans, which can affect just the prostate or the urinarygenital tract. The other changes, include complete loss of spermatogenesis are age related and likely did not contribute significantly to the wolf's clinical signs. Helicobacter infection is common in carnivores, but only occasionally results in inflammation and damage to the stomach. No damage was noted in this case. In the sections of the testicles examined, no tumor was identified.

Dalen Agnew, DVM, PhD, DACVP
 (Electronically signed by) DA
 Verified: 10.19.2016 23:07
 DA /DA

Necropsy Case Info for Husbandry Staff (R1 Note)

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Addendum

Date	Note	Reported By
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Audit Trail

Record locked by Kimberly A. Thompson on 20/Oct/2016 at 08:46