

2010.052

# University of Minnesota

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**Accession Number:** D10-043927

**Veterinarian:**

Dr. Rachel Thompson  
Minnesota Zoological Garden  
13000 Zoo Boulevard  
Apple Valley, MN 55124

**Owner:** MN ZOO 10962 MEXICAN WOLF  
APPLE VALLEY, MN 55124

**Site:**

**Received:** 09/27/2010

**Reference:** MNZoo 10962

**Species:** Miscellaneous Mammals

**Breed:** Wolf

**Age:** 7 years

**Sex:** Male

**Weight:** 34.4 kg

**History:** Found death in the holding with distended abdomen in the morning of September 27 of 2010. The animal had a history of fighting.

**Specimen:** The whole body of a Mexican Wolf was submitted in a state of good postmortem preservation. Microchip identification was not detected using a universal microchip scanner.

**Necropsy:**

**Body Condition Score:** 2/5 (1 = emaciated and 5 = obese). Both ear showed healed wounds. The mandibular right I2 left I2 and I3 teeth were missing. The maxilla was deformed.

**General Findings:** There was obvious distension of the abdomen.

**Body cavities:** There was tannish yellow fluid and some foam with a fermented odor in the abdominal cavity.

**Integumentary system:** There were no significant macroscopic lesions.

**Muscular system:** There were no significant macroscopic lesions.

**Skeletal system:** There was a multilobulated neoplastic mass elevating, infiltrating, expanding and replacing nasal, maxillary, frontal, zygomatic and lacrimal and palatine bones. The mass was completely occupying the nasal sinuses and replaced nasal concha.

**Respiratory system:** There were no significant macroscopic lesions.

**Cardiovascular system:** The heart weighed 586 grams. There was a mild myxomatous degeneration of the mitral valves.

**Alimentary system:** The stomach was rotated 360 degrees clockwise on its mesenteric axis. The portal vein was distended with blood. Blood vessels along the mesenteric attachment to the small intestine were markedly engorged with blood. The stomach was ruptured and contained a tannish yellow fluid and some foam with a fermented odor. The serosal and mucosal surfaces of the jejunum and ileum were pale. The liver was pale and weighed 1.750 kg.

**Urinary system:** There were no significant macroscopic lesions.

Endocrine system: There were no significant macroscopic lesions.

Reproductive system: This animal was an intact male. There were no significant macroscopic lesions.

Hemolymphatic system: The spleen was extremely enlarged and markedly congested and weighed 1.859 kg. The tail of the spleen extended to the pelvic inlet and the spleen itself was pulled into the shape of a V. The splenic capsule was covered with a fine lamina of fibrin.

Nervous system: There were no significant macroscopic lesions.

**Histopathology:**

Nasal mass (slide K): Extending to all cut margin and infiltrating preexisting soft tissue was an expansile, unencapsulated, infiltrative neoplasm composed of anastomosing cords, trabeculae, and nests of polygonal cells supported by a moderate amount of fibrovascular stroma. Neoplastic cells had distinct cell borders, abundant brightly eosinophilic cytoplasm, and prominent intercellular bridges. Nuclei were irregularly round to oval with finely stippled chromatin and 1-3 magenta nucleoli. There was frequent individual cell keratinization (dyskeratosis) and multifocal nests contain brightly eosinophilic central accumulations of compact lamellations of keratin (keratin pearls). The mitotic rate averages 2 per HPF with occasional bizarre mitotic figures. There was moderate anisokaryosis and anisocytosis. Nests of neoplastic cells were often surrounded by fibrous connective tissue with reactive fibroblasts (desmoplasia). Within the stroma of the neoplasm, there were lymphocytes, and plasma cells.

Lungs (slide H, I, J): There were no significant microscopic lesions.

Heart (slide L, M, N): There were no significant microscopic lesions.

Kidneys (slide O): There was moderate vacuolation of the proximate tubules.

Urinary Bladder (slide P): There were no significant microscopic lesions.

Liver (slide Q): There was diffuse moderate centrilobular and portal congestion.

Adrenal glands (slide R): There were no significant microscopic lesions.

Thyroids glands (slide S ): There were no significant microscopic lesions.

Pancreas (slide B): There were no significant microscopic lesions.

Tongue (slide F): There was multifocal pyogranulomatous inflammation with intralesional foreign plant material.

Esophagus (slide A): There were no significant microscopic lesions.

Stomach (slide A): There was a diffuse and transmural hemorrhagic necrosis of the gastric wall.

Duodenum (slide B): There was a lymphoplasmacytic moderate infiltration expanding the propria of the mucosa.

Jejunum (slide C and E): There were no significant microscopic lesions.

Ilium (slide D): There were no significant microscopic lesions.

Colon (slide C): There were no significant microscopic lesions.

Spleen (slide Q): There was a diffuse severe congestion.

Skeletal muscle - Diaphragm (slide S): There were no significant microscopic lesions.

Brain (slide T to Z): There were no significant microscopic lesions.

Eyes (slides AA and AB): There were no significant microscopic lesions.

**Molecular Diagnostics:** Leptospira PCR was negative.

**Parasitology:** Eimeria sp ++ (Spurious parasite) were found on flotation examination.

**Toxicology:** No abnormal mineral levels were detected in hepatic tissue.

**Diagnosis:**

1. Stomach: Acute gastric dilatation and 360 degree clockwise gastric volvulus and hemorrhagic infarction
2. Spleen, splenic displacement and marked congestion, secondary to 1.
3. Nasal cavity and bones: Squamous cell carcinoma

**Comments:** The cause of the acute death was a Gastric dilatation and volvulus. Gastric dilatation and volvulus (a twisting of the stomach on its mesenteric axis) are fairly commonly found in deep chested breeds of dogs (German Shepherd dog). This condition has been associated with consumption of cereal based diets, feeding the daily diet as a single meal followed by various types of exercise. Twisting of the stomach on its mesenteric axis prevents vomiting.

The whole carcass was frozen and sample of the principal parenchyma (heart, liver, spleen, kidneys, lungs and intestine) were saved and frozen. Fragments of tissue were fixed in 10% buffered formalin following the Mexican wolf necropsy protocol.

Anibal G. Armien, DVM, MSc, PhD, Diplomate, ACVP

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<b>Fax:</b>	<b>Mail:</b>	<b>Written:</b> 10/12/2010	<b>Addendum:</b>
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