



# Latin Comparative Pathology Group

## The Latin Subdivision of the CL Davis Foundation

### Diagnostic Exercise

Case #: 59 Month: August Year: 2015

*Answer Sheet*

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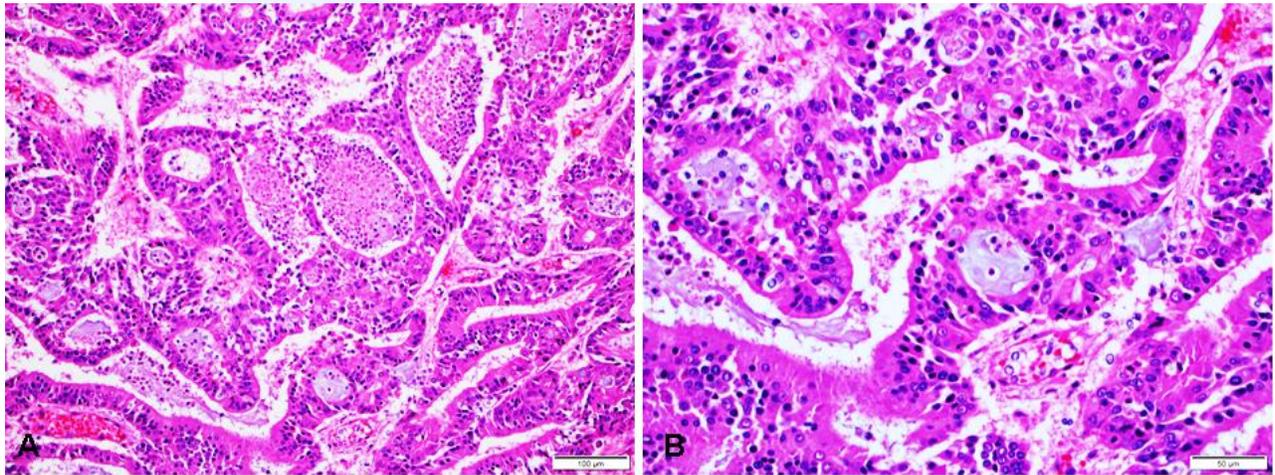
#### **Diagnoses:**

- 1) **Gross description:** (a) The left nasal cavity contains a soft, red to pink to tan, irregular, poorly demarcated mass at the level of the caudal nasal turbinates (5.5 x 2.0 x 2.3 cm) that has completely effaced the turbinates and extends into the left frontal sinus; (b) Within the oral cavity there is a dark black, firm, multilobulated mass at the junction of the hard and soft palate extending from 209 to 210 (2.3 x 1.0 x 0.5 cm).
- 2) **Morphologic Diagnosis(es):** (a) Nasal adenocarcinoma; (b) Histologically well-differentiated melanocytic neoplasm of the oral cavity (melanocytoma).
- 3) **Differential Diagnoses:** (a) Other carcinomas (e.g. squamous cell carcinoma, transitional carcinoma), olfactory neuroblastoma, neuroendocrine carcinoma, osteosarcoma, chondrosarcoma, round cell tumors (e.g. lymphoma, transmissible venereal tumor, histiocytic sarcoma), abscess, granuloma (e.g. fungal); (b): Malignant melanoma.

#### **Microscopic findings:**

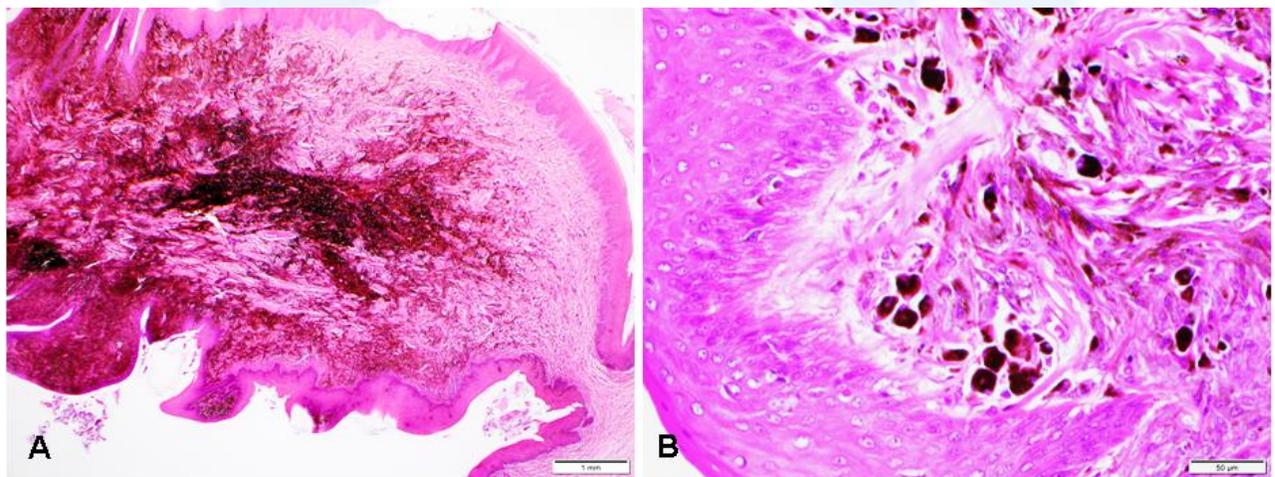
(a): The nasal mass is composed of a poorly-demarcated, unencapsulated neoplasm arranged in tubules, papillary projections and occasional nests (Figure 2A). The neoplastic cells vary from polygonal to cuboidal to columnar (Figure 2B) with variably distinct borders, moderate amounts of eosinophilic cytoplasm, and round to ovoid nuclei with coarsely stippled chromatin and one nucleolus. There is moderate anisocytosis and anisokaryosis, and the mitotic index is 14 (per 10 high power fields). Basophilic material is occasionally present within the tubular lumina (Figure

2B). There are multifocal to coalescing areas of necrosis and moderate numbers of neutrophils, plasma cells, and fewer macrophages and lymphocytes.



**Figure 2A and 2B**

(b): The oral mass is well-demarcated, unencapsulated, and exophytic (Figure 3A). The neoplastic cells exhibit junctional activity (nests or aggregates at the dermoepidermal junction) (Figure 3B). The neoplastic cells are arranged in bundles and streams or sheets separated by a collagenous matrix. The cells are round to spindle-shaped with variably distinct cell borders. The cytoplasm contains moderate to abundant amount of light to dark brown granules (melanin). The nuclei vary from round to polygonal with finely stippled to clumped chromatin and inconspicuous nucleoli. Overall, anisocytosis and anisokaryosis are mild, with mild nuclear atypia and the mitotic index is 2 (per 10 high power fields). There is no evidence of lymphovascular invasion (Figure 3B).



**Figure 3A and 3B**

**Discussion:** Primary nasal neoplasia is more common in older dogs<sup>1-3</sup> and considered the most common cause of chronic nasal discharge or epistaxis<sup>4-5</sup>. Patients with nasal neoplasms often present with non-specific clinical signs including nasal discharge, epistaxis, sneezing, dyspnea, and ocular discharge; larger neoplasms can cause facial deformation and exophthalmia<sup>3,6</sup>. If neoplastic cells invade the cranial vault, neurological clinical signs including seizures, behavior changes, and obtundation are common<sup>7</sup>. In dogs, carcinomas are more common than sarcomas, including adenocarcinoma, transitional carcinoma and squamous cell carcinoma<sup>3,8</sup>. Nasal carcinomas are often locally invasive and destructive leading to loss of function, with low metastatic potential<sup>9</sup>. Histologically, nasal adenocarcinomas have acinar, papillary, or tubulopapillary glandular structures lined by cuboidal to columnar cells, and may have secretion within the tubular lumina. Transitional carcinomas consist of thick and broad nests of polygonal to cuboidal cells, with no tubules or rare squamous differentiation, reminiscent of a zone of transitional epithelium between the rostral squamous epithelium of the nose and the more caudal respiratory epithelium<sup>3</sup>. Squamous cell carcinomas have the same histological features as elsewhere in the body with squamous differentiation of the neoplastic cells. The expression of cyclooxygenase isoform 2 (COX-2) has been studied as a prognostic indicator for several neoplasms and is mainly related with tumor growth and angiogenesis. Although nasal carcinomas have a high rate of COX-2 positive staining by immunohistochemistry<sup>10,11</sup>, this positive expression is not a significant prognostic value for canine nasal carcinomas<sup>12</sup>.

Although melanocytic neoplasms of the oral cavity and lip in dogs are most commonly malignant<sup>13</sup>, the case herein describes a benign well-differentiated oral melanocytic neoplasm. Recently, it has been recognized that a subset of melanocytic neoplasms of the oral cavity of dogs behave in a more benign fashion<sup>13,14</sup>; however, differentiating benign versus malignant oral melanocytic tumors remains a challenge for pathologists. Several factors can aid in the diagnosis of a benign melanocytic tumor including mitotic index, degree of nuclear atypia, degree of pigmentation, and evidence of lymphatic invasion<sup>13-15</sup>. A mitotic index of < 4/10hpf has a favorable prognosis for oral melanocytic tumors<sup>13</sup>. In addition, Ki67 immunohistochemistry can also aid in prognosis of oral melanocytic neoplasms<sup>13,15-16</sup>. Oral malignant melanomas often exhibit cytologic criteria of malignancy, with increased nuclear atypia and higher mitotic index. Malignant melanomas have variable amounts of cytoplasmic melanin, with amelanotic malignant melanomas often posing a diagnostic challenge<sup>17</sup>. A cocktail of antibodies against PNL2, Melan-A, tyrosinase-related proteins 1 and 2 (TRP-1, and TRP-2) has been successful in identifying canine oral amelanotic malignant melanomas<sup>15,18</sup>. Metastasis of oral malignant melanoma often occurs to lymph nodes and lungs, but has also been described in brain,

heart, and spleen<sup>17</sup>. In the patient presented herein, there was no evidence of lymphatic invasion or metastasis of the oral melanocytic neoplasm.

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