ECVP/ESVP Summer School in Veterinary Pathology

Summer School 2014 – Mock Exam

CASE 3, Dog Pancreas: hyalinizing pancreatic adenocarcinoma

Histologic Description	*Points*
Pancreas	0,5
First sentence Approximately 90% (1) of the pancreatic parenchyma is substituted (0,5) and compressed (0,5) by an approximately 2x2 cm (0,5) neoplastic lesion	2,5
Neoplasm	0
Variable cellularity	0,5
Partially encapsulated/Partially demarcated	0,5
Infiltrative (infiltrating the capsule)	1
Extending to cut borders	1
Organized in lobules/Multilobular/Nodular (all accepted)	0,5
Dissected by fibrous/fibrovascular thick stalks of stroma (desmolasia)	0,5
Lobules composed of acini/tubules/nests	0,5
Elevated amount of amorphous homogeneous lightly eosinophilic/hyaline material organized in lakes and globular aggregates	0,5
Elevated numbers of capillaries comprised in the matrix	0,5
Neoplastic cells	0
Specific size 20-25 microns	1
Intermediate N/C ratio	0,5
Shape Cubical/cylindrical/polygonal	0,5
Variably distinct cell margins	0,5
Apical eosinophilic (0,5) and basal pole basophilic cytoplasm (0,5)	1
Polarized nuclei	0,5
Round to oval 8-12 micron nuclei	0,5
Finely granular chromatin	0,5
One to two small basophilic evident nucleoli	0,5
Mild anysocytosis and anysokaryosis/pleomorphism	0,5
Range of 0-2 mitoses X hpf	1
Necrosis of approx 30% of the tumor	1
Hemorrhages/Hemosiderophages any	0,5
Morphologic Diagnosis Hyalinizing (2) pancreatic (0,5) adenocarcinoma (0,5)	3

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DIAGNOSTIC PATHOLOGY

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Hyalinizing Pancreatic Adenocarcinoma in Six Dogs

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Abstract. Exocrine pancreatic carcinoma is a particularly malignant neoplasm of the dog. Clinical and pathologic findings of an unusual variant of exocrine pancreatic neoplasia termed hyalinizing pancreatic adenocarcinoma were evaluated in 6 dogs. On microscopic examination, neoplasms were composed of tubules and acini of epithelial cells, with bright eosinophilic granular apical cytoplasm. Tubular lumina and tumor stroma contained abundant hyaline material that resembled amyloid. The hyaline material was not congophilic, and tumor cells and hyaline material were immunohistochemically negative for amyloid A, immunoglobulin light chains (κ and λ), amylin (islet amyloid polypeptide), laminin, and α_1-antitrypsin. Two patients survived longer than 15 months after diagnosis; one of these dogs was untreated and had grossly evident metastasis at the time of diagnosis. The deaths of the other 4 dogs occurred as a result of poor recovery after partial pancreatectomy or in association with other concurrent life-threatening conditions. Two dogs were diagnosed with panniculitis, a condition rarely associated with pancreatic disease. Further evaluation is needed to determine the composition and biologic significance of intratumor hyaline material. Studies that associate exocrine pancreatic carcinoma grade and histologic subtype with prognostic outcomes in the dog are warranted such that appropriate therapy can be elected.

Key words: Amyloid; carcinoma; dogs; hyaline; pancreas; neoplasia.

HISTOPATHOLOGICAL DESCRIPTION IN THE PAPER: aggregates of **eosinophilic hyaline material** that resembled amyloid, which expanded the fine **fibrovascular stroma between tumor cells. Tubular and tubulocystic** architectural patterns predominated but alternated with sparse solid areas where cells were organized in **acini, dilated acini, nests, and trabeculae**. Tumor cells were **cuboidal, polygonal, or columnar**, and had abundant **eosinophilic and granular apical cytoplasm**, suggestive of zymogen granules. **Nuclei were basal, round, and hyperchromatic, with large nucleoli and frequent mitotic figures.** Additional features of cellular atypia included mild **anisocytosis and nuclear pleomorphism**. **Intratubular hyaline material** was more deeply eosinophilic than interstitial hyaline material, and contained a few neutrophils, macrophages, eosinophils, and necrotic cellular debris. Tumors were discontinuously bordered by fibrous connective tissue, suggestive of collapsed pancreatic interstitium. Infiltrative nests of neoplastic epithelial cells extend into the fibrous connective tissue. **The hyaline material and cytoplasmic granules does not stain with mucicarmine or PAS. With Masson's trichrome, hyaline material stains blue-gray. Hyaline material was neither congophilic nor birefringent.**

IMMUNOHISTOCHEMISTRY

Material negative for AA, amylin, lambda light chains and kappa light chains, laminin, and a1-antitrypsin.

MOST LIKELY BM

DISCUSSION

Hyalinizing pancreatic adenocarcinoma is unique variant of exocrine pancreatic carcinoma that was identified in 6 mature-to-elderly mid-sized breed dogs. The neoplasm usually involved the **right limb of the pancreas** and was grossly evident as a **solitary mass**. For most dogs of the study population, the discovery of a pancreatic mass was an **incidental**

finding. Substantially **elevated serum lipase and amylase levels were common** among affected dogs. On microscopic examination, hyalinizing pancreatic adenocarcinoma is distinguished from conventional exocrine pancreatic carcinoma by the presence of accumulated extracellular hyaline material. **Hyalinizing pancreatic adenocarcinoma does not seem to conform to the current World Health Organization classification for exocrine pancreatic neoplasia of domestic animals.**

Clinicians and pathologists should be aware that dogs with this neoplasm **may have a longer postdiagnosis survival period than for other exocrine pancreatic carcinomas**, especially when other conditions with poor prognoses are lacking. **Given the risks of pancreatic surgery, it is unclear whether surgical excision is justifiable for low-grade pancreatic cancer.**