



Diagnostic Exercise

From The Davis-Thompson Foundation*

Case #: 101 Month: July Year: 2018

Answer Sheet

Title: Cutaneous neoplasia in an Australian Green Tree Frog (*Litoria caerulea*).

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Description: Expanding the deep dermis is a moderately well demarcated, exophytic, non-encapsulated, densely cellular neoplasm. Neoplastic cells are forming multifocal trabeculae and islands, supported by a fine fibrovascular stroma. Neoplastic cells consist of two cell populations. Approximately 60% of the tumor contains densely packed cells that are 12 to 15 μm in diameter and polygonal with well-demarcated borders and large amounts of eosinophilic cytoplasm. Occasionally a single layer of cuboidal epithelial cells forms 30 to 70 μm in diameter ducts (ductal differentiation; adenocarcinoma), some of which are dilated up to 500 to 1500 μm in diameter and contain pyknotic cellular debris (necrosis). The nuclei are oval and centrally located with densely clumped chromatin and indistinct nucleoli. There is pronounced anisocytosis and anisokaryosis. Mitoses range from 0 to 6 per HPF, averaging 3 per HPF with occasional bizarre mitosis. Approximately 40% of the tumor is composed of neoplastic cells that are 15 to 30 μm in diameter and are polygonal with moderately well demarcated borders and moderate amounts of eosinophilic cytoplasm. The nuclei are round to oval and centrally located with clumped chromatin and up to two prominent eosinophilic nucleoli. There is up to three-fold anisocytosis and anisokaryosis. Mitoses range from 1 to 4 per HPF, averaging 3 per HPF with occasional bizarre mitosis. Within rare islands of these neoplastic cells are 15 to 20 μm in diameter, central accumulations of lamellar eosinophilic keratin (keratin pearls; squamous cell differentiation). The overlying superficial dermis contains moderate numbers of randomly scattered lymphocytes and plasma cells.

Morphologic Diagnosis: Left leg mass: Ductal adenocarcinoma with squamous cell differentiation.

Discussion: Compared with mammals, neoplasia in amphibians less documented and a large proportion of the reported cases are epithelial. There are two distinctly different populations of cells present within this neoplasm. One population shows ductal differentiation (morphology consistent with adenocarcinoma); however, a portion of this mass also consists of a neoplasm with larger cells and prominent nucleoli that tend to form lobules and islands rather than ducts

and trabeculae (features consistent with squamous cell carcinoma). Although these appear to be separate neoplastic entities, adenocarcinomas with squamous differentiation have been previously reported in amphibians.

Berger et al. (2004) outline similar such neoplasms in the dermis of two wild adult Green tree frogs. These adenocarcinomas had a low mitotic rate, keratin pearls or necrotic foci, and small ducts lined by cuboidal cells. Khudoley and Mizgireuv (1980) provide a further detailed morphological study of 78 cases of skin tumours in frogs. They conclude that development of these neoplasms occurs from the epithelium of excretory ducts of the skin mucous gland cells.

Although the neoplasm in these reports and the current case have morphology consistent with a malignant process, there were no metastatic lesions present within the internal organs.

References and Recommended Literature:

Ladds P. Pathology of Australian Native Wildlife. CSIRO Publishing, VIC. 2009. P. 447-448.

Berger L. et al. A squamous cell carcinoma and an adenocarcinoma in Australian treefrogs. Australian Veterinary Journal. 2004. 82(1-2):96-98.

Khudoley V.V., and Mizgireuv I. V. On Spontaneous Skin Tumours in Amphibia. Neoplasma. 1980. 27(3):289-293.

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