

Cutaneous Epitheliotropic Discrete Cell Tumor in a Tiger Salamander (*Ambystoma tigrinum*)

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A tiger salamander (*Ambystoma tigrinum*) which had been maintained for seven years developed a unilateral hind limb mass which grew quickly over a period of several weeks. Following euthanasia, the tumor was excised and examined histologically. The tumor was characterized by numerous pleomorphic cells with no discernible histologic architecture. Many cells had scant cytoplasm, while others had abundant, foamy cytoplasm. In addition, several cystic structures containing proteinaceous material were present. The tumor cells were negative by immunohistochemistry for vimentin, cytokeratin, CD3 molecule, S100, and actin. In summary, the tumor is described as an epitheliotropic discrete cell tumor.

A wild-caught tiger salamander (*Ambystoma tigrinum*) was maintained over a period of seven years for purposes of classroom display. The animal was housed in a flow-through tank supplied with well water maintained between 19-21° C. The room in which the animal was maintained was kept on a 12:12 light:dark cycle. Live crickets and goldfish were supplied to the animal as food. A reddened mass was noted on the cranial aspect of the left rear hindlimb, between the stifle and the abdomen (Figure 1). Over the course of one month, the mass grew to a dimension of 2.0 x 2.1 x 1.3 cm. The leg was moderately swollen, distal to the mass.

The animal was humanely euthanized by immersion in a dilution (3.0 gm/liter) of tricaine methanesulfonate. The tumor was then excised and found to be completely encapsulated, firm and light brown internally. No other lesions were noted grossly.

The tissue was fixed in 10% neutral buffered formalin, embedded in paraffin wax, sectioned at 5 µm, and stained with haematoxylin and eosin (HE). Additional sections were stained by an avidin-biotin complex immunoperoxidase method with commercially available monoclonal and polyclonal antibodies (Vector Research Laboratories, Burlington, CA) for vimentin, cytokeratin, CD3 molecule, S100, and actin.

The tumor had no discernible organized histologic architecture. It was characterized by numerous pleomorphic cells with dense nuclei. Many cells had scant cytoplasm, while others had abundant, foamy cytoplasm (Figure 2). Several cystic structures lined by endothelium containing amorphous, proteinaceous material were present (Figure

3). The tumor cells were negative by immunohistochemistry for vimentin, cytokeratin, CD3 molecule, S100, and actin. Based upon these findings, we describe this tumor as an epitheliotropic discrete cell tumor.

Reports of spontaneous neoplasia in amphibians are rare, and mostly describe tumors of the integument (Squire, et al. 1978). In urodeles specifically, cases of testicular tumors (Humphrey 1969), squamous cell papilloma (Wirll 1972; Roe and Harshburger 1977; Roe 1977), and dermal fibroma and fibrosarcoma (Roe and Harshburger 1977; Roe 1977) have been described. Melanoma and malignant melanoma (Roe and Harshburger 1977; Roe 1977; Khudoley and Eliseiv 1979) have been reported, with multiple melanomas characterized by cell anaplasia and polymorphism having been described in the Mexican axolotl, *A. mexicanum* (Khudoley and Eliseiv 1979). Cutaneous mastocytomas have been described in both *A. mexicanum* and *A. tigrinum* (Harshburger, et al. 1999; Delaney, et al. 1980; Khudoley and Mizgirev 1980). These tumors were moderately cellular unencapsulated masses that usually infiltrated the dermis and hypodermis with the destruction of intervening tissues. In general, specific etiologies have not been ascribed to neoplasia in urodeles, although a chemical etiology for

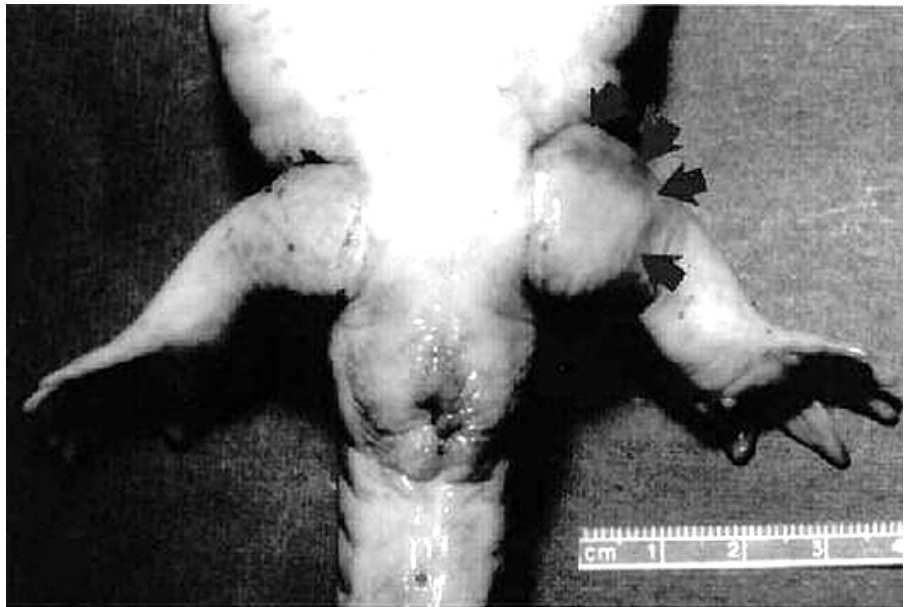


Fig 1. Abnormal mass (arrow) on left rear leg of tiger salamander (*Ambystoma tigrinum*). Note the moderate swelling of the leg.

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cutaneous neoplasms in tiger salamanders harvested from a sewage lagoon has been suggested (Roe and Harshbarger 1977; Roe 1977).

The case described here differs from previously described cutaneous tumors of *A. tigrinum* in that neither pigmented nor granule-containing cells are a feature of this tumor. The cells appear to be epitheliotropic in appearance, with extensive pleomorphism. We believe this to be the first

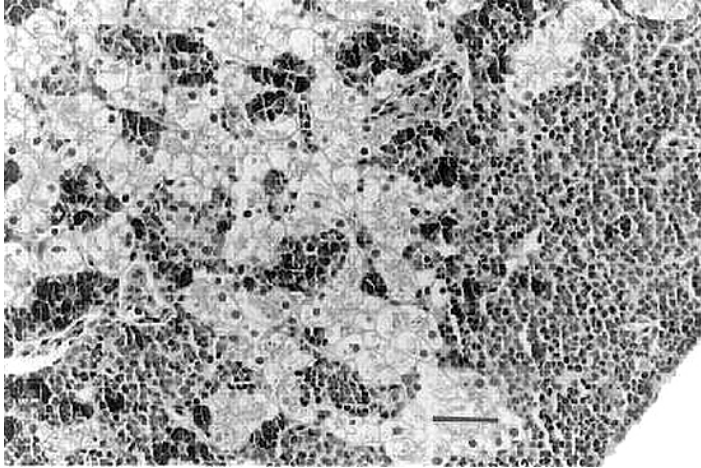


Fig. 2. Photomicrograph (200 x) of tumor demonstrating pleomorphic cell population, consisting of cells with scant cytoplasm and cells with abundant, foamy cytoplasm. Hematoxylin and eosin. Bar=20 μ m.

reported case of an epitheliotropic discrete cell tumor in the tiger salamander. The long history of laboratory maintenance of this animal argues against a chemical etiology, although chemical induction at an early age cannot be ruled out due to the unknown conditions from which this animal was originally harvested.

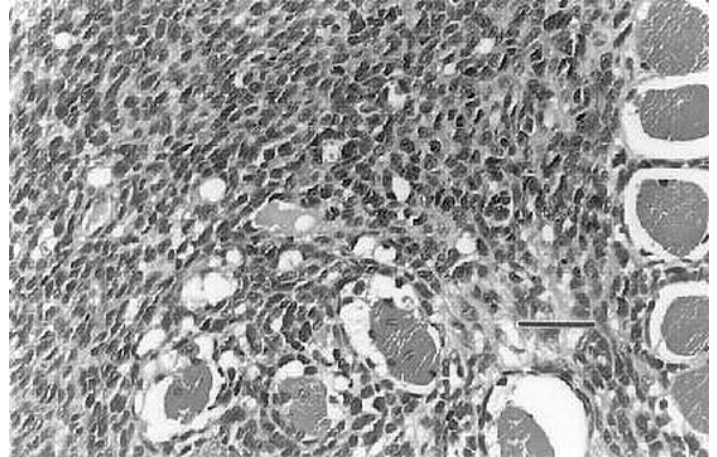


Fig. 3. Photomicrograph (400 x) of tumor demonstrating cystic structures (A) surrounded by numerous pleomorphic cells. Hematoxylin and eosin. Bar=40 μ m.

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