

to little skate microsomes in incubation mixtures resulted in very little inhibition (data not shown) suggesting that the hepatopancreas inhibitor can be washed out of the hepatopancreas microsomes. Lobster green gland, the renal organ in crustaceans also contained no detectable microsomal 7-ethoxycoumarin deethylating activity. In mammals kidneys do possess some systems analogous to hepatic microsomal drug-metabolizing enzymes.

Devereux and Fouts have detected high levels of N-oxidation in mammalian liver and lung (Chemico-Biol. Interactions, in press). However no N,N-dimethylaniline (DMA) N-oxidation was found in liver microsomes from the following species: little skate, dogfish shark, King of Norway, mummichog, winter flounder, mackerel, hagfish, eel or lobster. DMA N-oxidase activity has been reported in liver homogenates from elasmobranchs of the Bimini area (Goldstein, Dewitt-Harley, Comp. Biochem. Physiol. 45, 895, 1973).

In summary this data revealed mixed-function oxidase activity in livers of all fish species studied except mackerel and suggested enzyme degradation by digestive juice as a possible reason for lack of mixed-function oxidase activity in hepatopancreas from crustaceans.

1973 #40

EPENDYMOMA OF THE CHOROID PLEXUS OF AN ELASMOBRANCH *Squalus acanthias*

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Neoplasms of elasmobranchs are quite rare and no tumors of the central nervous system have been reported in this class of animals. In mid-August of 1973 a two kg sexually mature male spiny dogfish *Squalus acanthias* was caught in Frenchman's Bay near Bar Harbor, Maine. A three mm in diameter tan, circumscribed tumor was projected dorsad from the mid-dorso-lateral surface of the right ala of the choroid plexus of the fourth ventricle. The choroid plexus is about nine mm wide, very thin, and transparent in this area over the medulla. The tumor was excised, fixed in formalin (10 percent in dogfish Ringer's solution), embedded in paraffin, sectioned at 6 μ , and stained with hematoxylin and eosin. A small portion of the tumor was further fixed in 1.5 percent glutaraldehyde, postfixed in osmium tetroxide, embedded in Epon-Araldite, stained with lead citrate and uranyl acetate and examined in an electron microscope. Light microscopy revealed a differentiated well-vascularized papillary neoplasm growing from a hyperplastic region of choroid plexus. The tumor surface consisted of papillary projections covered by columnar cells (Figure 1). Crypts and acini lined by columnar cells were present throughout the tumor (Figure 2). Although numerous neoplastic cells filled some of the acinar lumina no invasion of the basement membrane was observed. The neoplastic cells contained abundant vacuolated cytoplasm, had indistinct borders and hyperchromatic pleomorphic nuclei. Mitotic figures were present in moderate numbers throughout the neoplastic mass. The ultrastructural studies revealed pleomorphic nuclei with marginated chromatin and cytoplasm that was quite vacuolated (Figure 3).

It is concluded that this is a benign neoplasm arising from the choroid plexus which can be best described by the general term ependymoma.

Over 1000 dogfish brains were dissected during the past five years including over 300 during

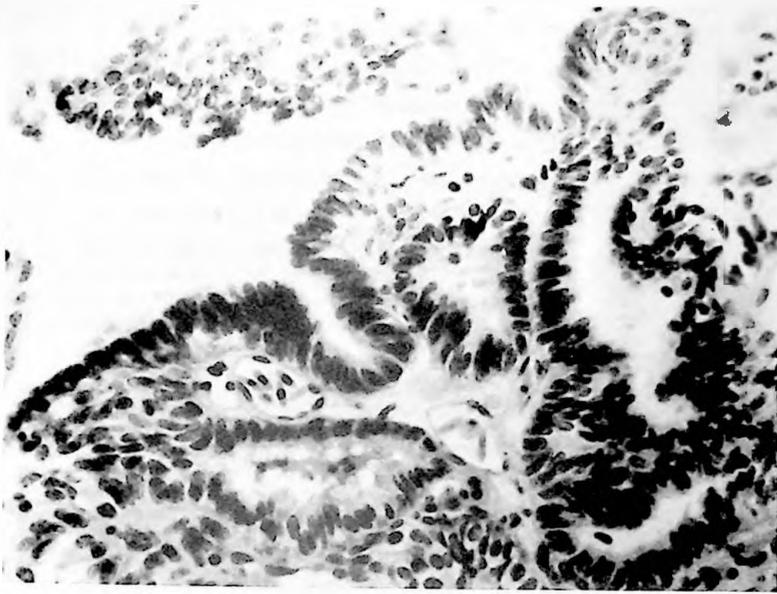


Figure 1: Photomicrograph of surface of ependymoma illustrating the papillary folds covered by columnar epithelium.

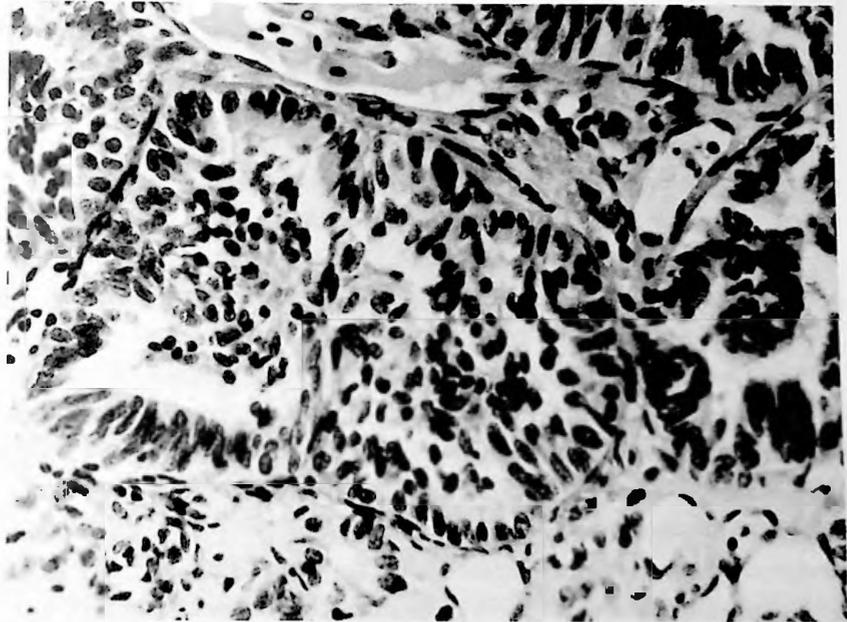


Figure 2: Photomicrograph of an acinus in the ependymoma. Note the large number of vascular spaces within this neoplasm.

the Summer of 1973 but no other nodule in the choroid plexus has been identified. Wellings (NCI, Monograph #31, 59-128, 1969) cites 14 previously reported neoplasms of elasmobranchs but none of these occurred in the brain.

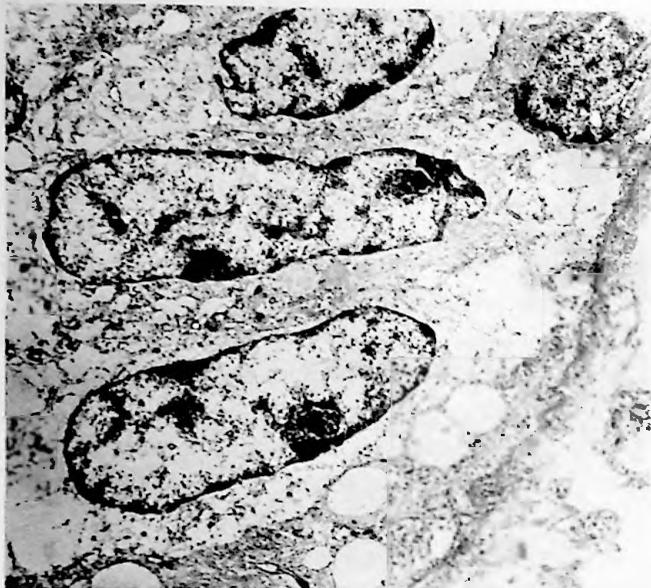


Figure 3: Electron photomicrograph of ependymoma cells. Note the pleomorphic nature of the nuclei, the prominent nucleoli, margination of chromatin and the vacuolated nature of the cytoplasm.

1973 #41

CLEAVAGE FURROW ESTABLISHMENT IN MECHANICALLY DISTURBED SAND DOLLAR EGGS

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In cleaving eggs the division mechanism is established at the cell surface as a consequence of the presence of the mitotic apparatus. Communication between surface and mitotic apparatus is assumed; little is known concerning its nature. The fact that the morphological manifestation of the mechanism is restricted to a band 10 microns wide strongly suggests considerable specificity. Two general mechanisms have been suggested: free diffusion and alternatively a mechanism comparable to propagation associated with the linear elements of the mitotic apparatus. The purpose of this investigation was to interfere mechanically with the process in order to learn more of its nature. Experiments were accomplished on *Echinarachnius parma* by micromanipulation. The interference was begun before furrow establishment and continued until the furrow appeared.

Normal furrows appeared in the equatorial surface following continuous massage with the tip of a rounded needle. With each stroke the contents of the cell between the mitotic apparatus and the surface were shifted as well as the asters. In other experiments the mitotic apparatus and the equatorial cytoplasm were shifted without altering the appearance or timing of the cleavage furrow. Low frequency vibration was imposed in the equatorial surface by inserting a needle and tapping the manipulators 60-100 times per minute. Despite the shifting of the entire cell contents with each vibration, division was normal. Higher frequency vibrations were administered with an ordinary