SUBEPENDYMOMA: A NEWLY RECOGNIZED TUMOR OF SUBEPENDYMAL DERIVATION

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This presentation was stimulated by a detailed study of a series of seven cases of brain tumors composed predominantly of ectodermal elements deriving from the subependymal glia. The purpose is to describe the characteristic histologic features of the tumor and to discuss its origin and its differentiation from other types of gliomas. Two cases will be described in detail; the salient facts concerning the others will be summarized in the general discussion.

CASE REPORTS

Case 1. J.K., a 56-year-old man, was admitted to the hospital unconscious and in acute pulmonary edema. On previous admissions he had complained of repeated attacks of nausea, vomiting, rotatory vertigo, headaches and tinnitus. During the last ten years he had noticed a slowly progressing impairment of hearing. For several months prior to his final admission he complained about gradually increasing ataxic gait and he experienced difficulty in swallowing.

Examination on admission in 1938 disclosed a primary optic atrophy on the left and early papilledema with small hemorrhages on the right. There was a fine horizontal nystagmus on looking to either side, a slight weakness of the right facial nerve, and a moderate degree of atrophy of the right half of the tongue. The deep reflexes were hypoaetive. No paralysis of the extremities and no sensory disturbances could be detected.

The cerebrospinal fluid was clear and was under 350 mm. of water pressure; it contained 4 lymphocytes and 83 mg. per 100 cc. of protein; the Wassermann reaction was negative.

On Jan. 31, 1938 a posterior fossa exploration was made. The operation disclosed a sessile tumor arising from the floor of the fourth ventricle. A specimen was taken for biopsy and a bony decompression was made. The dura was left open. His recovery was uneventful. He was about and active until a few days before his death on Dec. 25, 1943, 5 years and 11 months after the decompressive operation.

The pathologic findings exclusive of those of the nervous system were severe pulmonary edema, bronchopneumonia and acute left ventricular dilatation.

Fig. 1. Case 1. A large tumor arising from the floor of the IV ventricle and expanding toward the ventricular lumen.
The significant brain findings are illustrated in Fig. 1. A large tumor, measuring 4.6 cm. in diameter and arising from the floor of the fourth ventricle, had completely filled out the greatly distended ventricular lumen. The sharply circumscribed tumor presented as a granulated grayish-brown irregular mass adherent to the floor of the fourth ventricle.

Microscopic examination revealed a moderately cellular and well vascularized neoplastic tissue whose two main constituents were readily distinguishable. There were small cells with a rim of ill-defined cytoplasm and a small light-staining oval or slightly elongated nucleus. These cells of ectodermal derivation formed irregular nest-like aggregations separated by large cords of fibrous tissue (Fig. 2). The latter elements represent the second important con-

![Image of tumor](image)

**Fig. 2.** Case 1. Irregular nest-like aggregations of mature glial cells separated by large cords of neuroglial fibers. Hematoxylin eosin stain (×165).

stituent of the tumor. The fibers appear to be arranged in broad streaming bundles running in various directions so that some are cut longitudinally and others in cross sections. The connective-tissue stroma was very scanty. With the van Gieson stain no collagen was seen. There was a small amount of connective tissue about the blood vessels but it did not penetrate into the tumor tissue proper; it was strictly confined to the vicinity of the vessels. With the silver stains a small number of bipolar cells could be differentiated; there was a single process which left each pole of the cell. Multipolar cells were rarely seen. No nerve fibers could be demonstrated. By means of phosphotungstic acid hematoxylin stain for glial fibers, a thick feltwork of neuroglial fibers could be seen. These appeared as long sweeping threads mostly arranged in bundles. Special stains, the cresyl violet stain and the Bodian silver impregnation method, demonstrated neither nerve cells nor nerve fibers. Mitotic figures and giant cells were absent.

The tumor appeared well demarcated from the surrounding tissue and was not invasive. At its base the tumor gradually blended through transitional cell forms with the normal ele-