PLASTIC EPENDYMOMAS OF THE LATERAL RECESS

REPORT OF EIGHT VERIFIED CASES

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Tumors having their origin from the ependymal lining of the cerebral ventricles or, less often, from the central canal and filum terminale of the spinal cord, now are recognized generally as a fairly well defined neoplastic entity. As a rule they are well circumscribed tumors, the original shape of which tends to conform to the cavity in which the growth began; that is, the lateral, third, or, more often, the fourth ventricle. In its expansion the tumor compresses, deforms, or dislocates the regional tissues without invading them. In most instances, evidence of expansive growth continues to exist until the borders of the tumor are breached by operative procedures. Even then such masses tend to remain firm enough to retain their physical and structural integrity.

Some years ago, the senior author observed at autopsy performed on a young woman a tumor arising in the lateral recess which had adapted itself completely to the contours of its environment. It appeared as though the tissue of the tumor had behaved like melted wax, flowing out of one of the lateral exits of the fourth ventricle to occupy the cerebellopontine angle and the basilar cisterns. In the 7 years that have elapsed since this observation was made, 7 additional cases have been studied at autopsy. The two chief gross characteristics of these tumors—their tendency to conform like plastic material to the contour of regional structures and their apparent origin in the ependyma of the fourth ventricle or of the lateral recess itself—have suggested the title of this study. This contribution to their pathological anatomy seems warranted because so little attention has been paid in contemporary literature to the behavior of this particular group of ependymal tumors.

ORIGIN AND NATURE OF EPENDYMAL TUMORS

Little need now be said about this specific tumor "of the glioma group." Its origin from the ependymal lining of the cerebrospinal fluid passageways is suggested not only by its location within the natural cavities of the central nervous system but also by its cytological characteristics (blepharoplasten within the constituent cells) and its common tendency to form a mixed tumor with other growths of similar origin (medullo-epitheliomas and neuro-epitheliomas). This group of new growths is essentially benign even though an occasional example is found to contain mitotic figures. Their tendency to spread by means of "seeding" along the fluid pathways is not as marked as one might suspect on the basis of their location.

Because of certain architectural similarities, some writers have been inclined to consider the possible relation of ependymal tumors to other gliomas. For example, some have pointed out the similarity of the perivascular pseudorosettes of ependymomas to similar structures in astroblastosomas and suggested a similar genesis for both. The difference in location of these two tumors, their structural appearances, their rate of growth, as well as other behavioral characteristics of the ependymal tumors being considered here would further controvert any such family connections.*
REVIEW OF LITERATURE ON
"PLASTIC" EPENDYMOMAS

In his study over the years of the literature on ependymal tumors, the senior author did not encounter any specific mention of this particular characteristic of this variety of glioma. A re-survey at this time, some 25 years after the first case was reported by Ehlers and Courville, still indicates that remarkably little has been said about this type of growth. This fact would seem to justify the present report, which describes 8 examples. In their report in 1936, Ehlers and Courville cited 2 similar cases: a typical one was illustrated by Henschen in his monograph, and the other was described by Gross (Case 1) in a series of brain tumors in children. A third example was included in a study of 8 cases of ependymal tumors by Fincher and Coon. In this instance the tumor had almost completely enveloped the lower part of the medulla oblongata. That part of the growth that occupied the basilar cistern existed as a number of variously sized, flattened, grayish, soft plaques, which had extended out through the lateral recess from the fourth ventricle. Giampalmo described an ependymoma which extended from the fourth ventricle out through the lateral recess to envelop completely the lower portion of the medulla. Giampalmo pointed out that the extraventricular portion of these tumors was apt to show a variation in its architecture.

In their study of gliomas that occupy the cerebellopontine angle, Kernohan et al. stated that 80 per cent of such tumors prove to be ependymomas in a broad sense of the term. In their series of 8 cases limited to the lateral recess, 1 (Case 3) seemed to present some of the “plastic” characteristics of this group of tumors. That part of the growth that overlaid the pons was flat (being within the basilar cistern) and presented a smooth external surface. Another tumor of this type was depicted by Kernohan and Sayre in their study of tumors of the central nervous system.

Zülch illustrated another case of this type in his extensive treatise on brain tumors. In the section relating to ependymomas he pointed out the possibility that such tumors could extend from the fourth ventricle into the cisterna magna and lateral recess. The cases of Ehlers and Courville and Giampalmo were cited as illustrative.

In view of the experience of the present contributors, who discovered 8 cases of this type in their local series of 53 examples of intracranial ependymochoroidal tumors, many tumors of this type must have gone unreported. The basic aspects of the anatomic relationship of these “plastic” ependymomas will be made clear in the cases described below.

REPORT OF CASES

Case 1. A young woman, aged 20 years, had suboccipital headaches, and left-sided tinnitus with progressive deafness and dizziness over a period of 2 years, followed by blurring of vision. Neurological examination disclosed marked bilateral papilledema, nystagmus on left lateral gaze, weakness and hypalgesia of the left side of the face, deafness in the left ear and weakness of the extremities on the left. Vestibular tests revealed impaired and perverted responses on the left side. Suboccipital exploration disclosed a redish-colored friable encapsulated tumor in the left cerebellopontine angle. Death occurred 5 days after operation.

Autopsy. The cerebral convolutions were flattened and the lateral ventricles were moderately enlarged. An irregularly shaped, grayish-red mass of tumor lying beneath the arachnoid was found in the left cerebellopontine angle. It extended anteriorly over the basilar surface of the pons and reached from the interpeduncular cistern anteriorly to the lower end of the medulla. The tumor had also moulded itself over the left side of the pons. It contained a number of small cystic cavities.

Microscopically, the tumor was an ependymoblastoma, with classical perivascular rosettes.

Case 2. Signs of meningeal irritation and stupor had developed acutely in a 13-month-old female infant. She was admitted to the hospital with history of insomnia for 2 weeks and drowsiness and tremor for 1 day. Examination disclosed a semicomatose infant with irregular respiration and signs of meningeal irritation. Death from...