Granular-Cell “Myoblastoma” of the Neurohypophysis

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A mass lesion in the region of the sella turcica, with or without suprasellar extension, is generally assumed to be a tumor of the adenohypophysis. However, a tumor in this region may occasionally arise in the general area of the neurohypophysis and the hypophyseal stalk. Such a case, diagnosed histologically as a granular-cell “myoblastoma,” is recorded in this article.

So far only 4 cases of granular-cell “myoblastoma,” which have shown the symptomatology associated with an intrasellar mass lesion have been described in the literature. The present case is, we believe, the fifth of this kind.

Case Report

A 47-year-old female was referred to the Neurosurgical Department of the Rothschild Hadassah University Hospital, Jerusalem, with the tentative diagnosis of pituitary tumor.

The patient had suffered from severe headaches in the frontal and occipital regions for 6 years; these, however, disappeared abruptly about 6 months before admission. Four years previously she noticed disturbances of vision in her left eye, and she stumbled against people and objects on her left side. Ophthalmologic examination at that time, in another hospital, revealed the presence of scotomata in the left upper temporal visual field. The visual field in her right eye was normal. Roentgenograms of the skull showed enlargement of the sella turcica. During the following years the patient was under constant observation, and no progressive deficiency of either vision or visual fields was noted. Two weeks prior to the present admission she was examined in another clinic, at which time bilateral pallor of both optic discs and bitemporal hemianopia were found.

Examination. On admission the essential clinical findings were confined to the optic nerves. Bilateral primary optic-nerve atrophy was noted; the visual acuity was 6/7.5 in the right eye, and 6/30 in the left eye. The pupils were equal in size and reacted to light. Studies of the visual fields revealed loss of approximately three quadrants in the left eye, only little more than the upper nasal quadrant being preserved, and temporal hemianopia in the right eye (Fig. 1a).

Routine laboratory data were noncontributory. The patient weighed 69.2 kg. Blood pressure was 90/60 mm. Hg; pulse was full and regular. Repeated urinalyses were unremarkable. Hemoglobin was 14.6 gm. per cent, and the peripheral blood count was within normal limits. Fasting blood sugar was 89 mg. per 100 ml. Blood urea nitrogen was 30 mg. per 100 ml. and blood electrolytes were normal. In the urine the 17-ketosteroids were 10.2 mg. per 24 hours. Serological tests were negative. The menstrual cycle was regular until a few months ago.

The electroencephalographic tracing was normal. Roentgenograms of the skull revealed enlargement of the sella turcica in its anteroposterior and vertical diameters, with destruction of the floor (Fig. 2). A left carotid angiogram showed marked elevation of the ipsilateral anterior cerebral artery in the anteroposterior view. Deep staining by the contrast material gave evidence, on lateral view, of the presence of a large, richly vascular, tumor in the pituitary region. The stain extended backwards and upwards, and impinged upon the floor of the 3rd ventricle (Fig. 3.)

A tentative diagnosis of pituitary adenoma was made, though its staining by the contrast material was considered to be quite an unusual feature associated with this type of tumor.

Operation. On Oct. 21, 1963, a right transfrontal craniotomy was performed. The right optic nerve was found pale, flattened and raised by a reddish tumor which protruded from both its sides and displaced the optic nerve and chiasm upwards and backwards. The tumor, as far as it could be seen, was covered by a richly vascularized thin capsule. After coagulation of the capsule an incision was made in it and the tumor was removed piecemeal. Because of the highly vascularized neoplastic tissue which produced severe bleeding, the procedure was terminated as soon as decompression of both optic nerves and chiasm was achieved.

Postoperative course was uneventful and the patient was discharged 10 days after operation. Examination of

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![Fig. 1. Visual-field studies with a white test object —4 mm.² for the left eye, and 0.25 mm.² for the right one. (a) On admission. (b) Three months after operation.](image-url)
that only some of the numerous granules seen in the sections stained with hematoxylin and eosin showed a positive stain with the periodic-acid Schiff procedure. With Laidlaw’s stain for reticulin many of the granules stained black. Treatment of the sections with potassium bichromate did not reveal the presence of chromaffin granules in the tumor. No astrocytic processes were demonstrated with Mallory’s phosphotungstic acid hematoxylin in sections treated with Zenker’s fixative. The nuclei of the neoplastic cells were situated mostly at the periphery of the cells and showed a considerable degree of pleomorphism and hyperchromatism. Many of the nuclei had an eosinophilic nucleolus; others, however, contained a round, eosinophilic Feulgen-negative mass surrounded by a clear halo, or a very large homogeneous, deeply amphophilic, Feulgen-positive central core, also surrounded by a thin clear halo bordering on marginalized chromatin. Both structures resembled intranuclear type “A” inclusions at different stages of their life-cycle.

The tumor cells were arranged in small compact groups closely surrounded by fine capillaries which formed a rich and intricate network. Whorls of plump fusiform cells intimately intermingled with numerous capillaries were seen in a few foci (Fig. 4). The whorls brought to mind the cellular psammomata in “mixed” meningiomas. Except for their shape and peculiar arrangement, these cells bore the morphological and staining characteristics described above in the polygonal and oval-shaped neoplastic cells.

The tumor was very poor in stroma which consisted of the aforementioned capillary network and of thin-walled arteries and veins of small calibre. A moderate amount of separate fibrils of reticulin adjacent to the periphery of the neoplastic cells was also seen. No mitotic figures were noted.

The final anatomical diagnosis of the surgical specimen was granular-cell myoblastoma, “myoblastoma,” probably arising in the general area of the neurohypophysis and hypophyseal stalk.

Discussion

In his original description of granular-cell myoblastoma in the tongue Abrikossoff considered...