CASE REPORTS

PITUICYTOMA OR GRANULAR-CELL MYOBLASTOMA OF THE PITUITARY GLAND?

REPORT OF CASE

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In a recent issue of this Journal, Liss and Kahn reported the clinicopathological study of a case of pituitary tumor whose histological features were thought to be consistent with the diagnosis of “pituicytoma.” According to the same authors a very similar, if not identical, tumor was described by Harland in 1953 as “granular-cell myoblastoma of the hypophyseal stalk.” We have recently seen a case which we feel belongs to the same category as those reported by Harland and by Liss and Kahn.

CASE HISTORY

A.S.V., an unmarried, 27-year-old female, was admitted to the Department of Neurology on Sept. 18, 1958, complaining of headache, vomiting and failure of vision. The headache had begun some 12 months previously and had progressed steadily. Vomiting and loss of vision appeared 6 months later.

During the year prior to admission, she had noticed anorexia and loss of weight (over 15 kg.). Past history revealed that menstruation had ceased 2 years before, at the age of 25.

Examination. The patient was an alert, cooperative, emaciated young woman weighing 50 kg. Blood pressure was 85/55 mm. Hg and temperature ranged between 36.0° and 36.8°C. There was primary atrophy of both optic nerves with complete loss of visual acuity in the left eye. With the right eye she could barely count fingers.

Laboratory Findings. Daily volume of urine was within normal limits. Its specific gravity was 1,009 and excretion of 17-ketosteroids was 2.1 mg./24 hrs. Count of blood cells disclosed a lymphocytosis of 49 per cent. Erythrocyte sedimentation rate was 47/93. Blood sugar tolerance test (Exton-Rose): fasting specimen 70 mg. per cent; ½ hr. specimen 79 mg. per cent; 1 hr. specimen 108 mg. per cent. Other blood studies showed that sodium, potassium, chloride, calcium, and cholesterol values were normal.

Roentgenograms of the skull disclosed a largely widened sella turcica with some absorption of the dorsum sellae.

Electroencephalogram showed a slow alpha rhythm (8 c. per sec.). Eye-opening response was abolished. Overbreathing produced bilateral, high hypersynchronous waves (3 c. per sec.), which were over 50 per cent higher in voltage in the left hemisphere. These hypersynchronous waves were followed by a polymorphous delta rhythm.

Carotid angiograms disclosed a most unusual picture. The vascular pattern was identical on both sides. In the lateral angiograms a great number of thin arteries could be seen, projecting on the region of the sella turcica (Fig. 1). These arteries originated in branches of the external carotid artery and entered the skull, running a rectilinear course. They divided into many curved branches directed downwards, which occupied an oval area of about 3X3.5 cm. (Fig. 2). The carotid siphon showed no alterations but the first portion of the anterior cerebral artery was displaced backwards. In subsequent angiograms (phlebograms) only a tenuous diffuse shadow of abnormal circulation was seen in the region of the sella turcica.
The anteroposterior angiograms showed that the initial portion of the anterior cerebral artery was displaced to the left side and slightly upwards. Projecting over the shadow of the sella turcica there was a diffuse abnormal circulation similar to that seen in the lateral angiograms.

Operation. After preparation with cortisone, a left osteoplastic exploration was made for presumed adenoma of the pituitary on Oct. 2, 1958. A capsulated, soft, reddish-yellow tumor was found in the chiasmal region, compressing especially the left optic nerve. Because of bleeding, only a partial, intracapsular extirpation was performed.

Microscopic Examination. The tumor is composed of spindle, cylindrical or ribbon-like cells with large cell bodies and oval or slightly elongated nuclei. The cells are arranged in bundles which in cross section appear as oval or polyhedral masses supported by delicate connective-tissue septa. Some elements have a dense, homogeneous and strongly acidophilic cytoplasm, but in most part the cytoplasm is coarsely granular and stains lightly with eosin (Figs. 3 and 4). No transverse or longitudinal fibrils were observed. Multinucleated cells and mitosis were seen occasionally.

The tissue is moderately vascular. The blood vessels are thin-walled, their walls consisting of a sheath of endothelial cells surrounded by some strands of collagenic tissue. Perivascular infiltration by lymphocyte-like cells is relatively common but no hemorrhagic or necrotic areas were found.

Subsequent Course. Cortisone therapy was maintained postoperatively and recovery was uneventful. The day following operation the blood sugar level was 145 mg. per cent. Four
Fig. 2. Right carotid arteriogram showing oval "shadow" in region of the sella turcica. A small arterial branch (arrow) coming from the external carotid artery (anterior meningeal artery?) goes to the tumor.

Fig. 3. Photomicrograph of tumor, showing bundles of ribbon-like cells with dense, homogeneous cytoplasm, and clear, lightly stained granular cells. Hematoxylin and eosin, X530.
days later the ionogram was normal and excretion of 17-ketosteroids was 5.35 mg./24 hrs. There was no evidence of diabetes insipidus.

Roentgen-ray therapy was started on Nov. 3, 1958 and when last examined (Jan. 16, 1959) the patient was in excellent health although amenorrheic. She continues to be almost blind in the left eye. Vision in the right eye has improved very slightly but the visual field is progressively expanding.

FIG. 4. Another area of tumor. Practically every cell is of granular type. Hematoxylin and eosin, X530.

DISCUSSION

Neither the clinical history nor the laboratory examinations showed any peculiarities that might differentiate this case from one of common adenoma of the pituitary body. However, as far as the angiographic picture was concerned, it differed notably from that of hypophysial adenomata. We refer particularly to the vascular shadow of the tumor, because, according to our experience, the displacement of the initial portion of the anterior cerebral artery is relatively frequent with suprasellar extensions of pituitary growths.4 Besides being a hitherto undescribed finding in tumors of this region, the shadow referred to has the peculiarity of being formed by vessels derived exclusively from the external carotid artery, since in normal conditions neither this artery nor any of its branches seem to contribute to the blood supply of the pituitary gland. From the angiographic point of view, the most probable diagnosis would be that of meningioma.

The other aspect we wish to discuss is one that relates to the nature of the neoplasm. As mentioned above, Liss and Kahn4 expressed the view that the tumor in their case was identical to the “granular-cell myoblastoma” of the hypophysial stalk reported by Harland.2 According to the latter author, minute tumors of the same type (the largest measured but 3 mm. in diameter) were found incidentally in normal hypophyses by Sternberg9 and Priesel,7 who termed them “choristomas.”
On the basis of the microphotographs and the histological description, there can be no doubt that the tumor in Harland’s case is very similar to the “granular-cell myoblastomas” described elsewhere in the body. However, the tumors in both List and Kahn’s case and our own, appear to be nearer to the so-called “malignant granular-cell myoblastomas”\(^8\) (Foot’s “malignant myoblastic myomas”\(^1\)), than to the classical “granular-cell myoblastomas.”

Even though briefly, we wish to mention here a fact which, although not decisive, may prove to be of some interest in the discussion of the true nature of pituitary “myoblastomas.” We refer to the findings of Kolmer\(^3\) and Morato,\(^6\) who described striated muscle fibers in certain regions of the gland or even in the infundibulum itself, in a Rhesus monkey and in a cat, respectively. Because of the complex transformations that take place during the embryogenesis of the hypophysis, it is perfectly understandable that immature muscle cells may migrate from the mesoblast, and reach the anlage of the gland. It would be these elements that at a later stage would transform into adult muscle fibers or, alternatively, would pursue an independent development and give rise to neoplasms.

On the other hand, although it is a general belief that pituicytes are not capable of producing tumors, it is an undisputable fact that there are no theoretical reasons to deny this conception. Unfortunately, since we were not able to use methods of silver impregnation, we could not derive from our case any conclusions in this regard.

SUMMARY

The authors report a case of pituitary tumor analogous to those described previously as “pituicytoma” and “granular-cell myoblastoma” by Liss and Kahn and by Harland. In addition to the histological characteristics, attention is paid particularly to the angiographic picture, the main features of which were similar to those of the meningiomas.

REFERENCES