PITUITARY CYST
LINED WITH A SINGLE LAYER OF COLUMNAR EPITHELIUM

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Clinically cysts found within the hypophyseal fossa occur most commonly as the result of degeneration within a pituitary adenoma. Intrasellar cysts lined by a single layer of epithelium and large enough to give rise to signs and symptoms are very infrequent. Clinically they may be indistinguishable from chromophobe pituitary adenomas. The limited number of cases that have been reported is insufficient to clarify the symptomatology and they were not followed long enough to determine the prognosis with cysts of this type.

CASE REPORT

D. McL., a 41-year-old white male contractor, was admitted to The Chicago Memorial Hospital on March 21, 1948, and discharged on March 31, 1948. He was referred by Dr. Isabelle McGarry of Evanston, Illinois.

He was first seen in consultation on April 28, 1947. He had been complaining for 2 months that his eyes tired easily while driving. Because of this symptom he had consulted Dr. McGarry who found the visual acuity of the right eye to be 20/40, and of the left eye, 20/20. A complete upper temporal quadrantic defect was demonstrated in the right eye and a partial upper temporal quadrantic defect in the left eye. No other neurological symptoms nor any symptoms related to abnormal function of the hypophysis or hypothalamus were elicited at that time.

Examination, April 28, 1947. The patient was a fully oriented, alert, cooperative, obese white male. He weighed 225 lbs. and was 5 ft. 8 ½ in. in height. B.P. was 170/100. His beard was sparse and the facial skin was finely wrinkled. The skin of the body was soft and smooth. Examination of the visual acuity and fields confirmed Dr. McGarry's findings. There was a definite pallor of both optic discs. The pupils were round, regular and equal and reacted well to light and in accommodation. The extra-ocular movements were full.

Roentgenograms of the skull revealed that the sella turcica was greatly expanded in all directions with marked thinning of the floor, which protruded downward into the region of the sphenoidal air cells. There was marked decalcification and thinning of the posterior clinoids. The pineal gland was calcified and showed a questionable displacement to the right.

Basal metabolism rate was −22.6 per cent. Glucose tolerance was within normal limits.

Clinical diagnosis: Pituitary adenoma of chromophobe type.

Course. In view of the patient's relatively good vision X-ray treatment was directed toward the hypophysis. He received two courses of 1500 R each, over a 10-day period at a 7-month interval. In spite of this therapy the defects in his visual fields increased although the visual acuity remained unchanged. In December 1947 a repeat BMR was −37 per cent. During the same month the patient began to notice a diminution of his libido.

Roentgenograms of the sella turcica in March 1948 showed no changes from the films taken a year earlier.

Because of the progression of the defect in the peripheral visual field and the decreasing

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libido the patient was admitted to the neurosurgical service of The Chicago Memorial Hospital.

Examination, March 21, 1948. The patient was obese, with scanty beard and soft and smooth skin. B.P. was 140/70. Visual fields demonstrated complete upper temporal field defects bilaterally. Visual acuity of the left eye was 20/30 and of the right eye 20/20. There was still definite pallor of both optic discs. There were no other neurological abnormalities. Blood count, urinalysis, and Wassermann and Kahn tests gave normal findings.

Operation. On March 22, 1948, a right frontal osteoplastic flap was reflected under local anesthesia. The optic chiasm was exposed by an extradural approach under the frontal lobe. The right optic nerve was pushed upward, compressed and thin. The chiasmatic cistern was opened exposing a very thin-walled cyst filling the sella turcica. The wall of the cyst was transparent and the contents were perfectly clear. A needle was inserted through the capsule of the cyst and 28 cc. of clear, colorless fluid were obtained. The fluid contained 270 mg. per cent of protein. After the cyst had been completely evacuated the opening into its capsule was enlarged and exploration of the cyst was carried out, but no solid tumor was found. A piece of the wall was removed for microscopic examination. The patient was in excellent condition throughout the operation.

Microscopic Examination. The surgical specimen was a portion of the thin cyst wall (Fig. 1). The inner surface was formed by a single layer of epithelial cells which varied from the columnar type in some areas to the cuboidal type in others (Fig. 2). No cilia were seen on care-

![Fig. 1. Photomicrograph of the wall of the cyst at low magnification. Hematoxylin and eosin.](image-url)
ful examination under the oil immersion lens. Next to the lining there was a loose stroma of supporting connective tissue. Within this stroma an occasional endothelial-lined capillary was to be seen. In certain areas of the connective tissue there were nests of cells possessing darkly stained oval and spherical nuclei.

This was judged to be a cyst of hypophyseal origin lined by non-ciliated columnar and cuboidal epithelium.

Postoperative Course. For several days the patient had a fever which did not rise above 102°F. The peripheral visual fields showed the left field to be full but there still remained a defect of the upper temporal quadrant on the right.

The patient was last seen in November 1953, 4½ years after the operation. The visual fields were unchanged. There was still a right upper temporal quadrantanopsia. The visual acuity of the right eye was 20/30 and of the left eye 20/30, and both optic discs were still pale. During the 4½ years he had remained asymptomatic demonstrating no evidence of further pituitary or hypothalamic involvement. He had no complaints and had continued his work as a contractor.

DISCUSSION

In 1920 Duffy described a comparable cyst as did Frazier and Alpers in 1934. However, these cysts differed from the one reported here in that the lining cells possessed cilia. At autopsy Russell encountered four similar cysts: one suprasellar, one intrasellar and two dumbbell-shaped tumors with both intrasellar and suprasellar parts, the constriction being at the diaphragma sellae. With the exception of the suprasellar portions of the dumbbell-shaped cysts, which were lined with squamous epithelium, each of the cysts that she examined was lined by a single layer of ciliated epithelium. In our case no cilia could be found. As this was a surgical
specimen which was promptly fixed it seems unlikely that cilia could have been present and later disintegrated. In other respects the lining cells in this cyst seemed similar to those in the others, i.e., they were columnar epithelial cells arranged in a single layer.

One should not be surprised to find such cysts large enough to produce signs and symptoms, for the normal hypophysis may contain cysts lined by ciliated columnar, columnar and cuboidal epithelial and occasional goblet cells. These cysts are filled with colloid and appear chiefly in the pars intermedia and in the region of the remnants of Rathke's cleft.\(^1,4,5\) Apparently the intrasellar cyst in this report represents one of these microscopic cysts which had enlarged because of the increased secretory activity of the wall of the cyst. Why these cysts rarely attain sufficient size to produce symptoms remains a mystery and invites speculation.

With the exception of Russell's suprasellar cysts, these uncommon lesions have been intrasellar and consequently are impossible to differentiate clinically from other intrasellar space-occupying lesions such as the adenomata. This case presented findings typical of a hypophysal chromophobe adenoma—bilateral upper temporal quadrantanopsia, hypopituitarism, bilateral optic atrophy and ballooning of the sella turcica.

It is very interesting and unexpected that the patient in our report has remained symptom-free for as long as 4½ years. In Duffy's\(^2\) case the patient, who had been operated on by the late Dr. Walter E. Dandy, expired 9 hours postoperatively. Frazier and Alper's\(^3\) patient was followed for 3 years postoperatively and during this time was gainfully employed and asymptomatic. His whereabouts and condition after that time are not known. Judging from our case and that reported by Frazier and Alpers it would appear that after the successful evacuation of a cyst of this sort the patient has an excellent outlook.

**SUMMARY**

The case of a man 41 years of age with an intrasellar cyst lined by columnar and cuboidal epithelium is reported. The symptoms and findings were suggestive of a chromophobe pituitary adenoma. At operation the cyst was evacuated. During the ensuing 4½ years the visual fields have improved and the patient has remained asymptomatic. This case and the only similar one reported in which the patient survived operation indicate that the prognosis for life and recovery from symptoms after evacuation of this type of cyst is exceptionally good.

**REFERENCES**

6. Russell, D. S. Personal communication.