THE DOCTOR IS IN:
COMPLEX CONDITIONS EXPLAINED SERIES

SPRING 2024

NSPC Brain & Spine Surgery

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Neurosurgeon

PITUITARY TUMORS

DEFINITION

Pituitary adenomas are benign growths from cells of the pituitary gland. Tumors 1 cm or larger in size are called "macroadenomas" and tumors under 1 cm in size are called "microadenomas."

These tumors may produce an excess of various pituitary hormones ("secretory" tumors) or may not produce any hormones ("non-secretory"). Pituitary tumors can also compress the normal pituitary gland and cause a deficiency of certain hormones. Pituitary tumors usually produce symptoms by either causing an excess or deficiency or pituitary hormones, or by compressing nerves that control the eye which can affect vision or eye movement.

The most common type of secretory adenoma is a "Prolactinoma" and produces an excess of "prolactin," a hormone involved in the production of breast milk. These tumors are usually treated with medicines alone.

The other two major types of secretory pituitary tumors cause either Cushing's Disease (in which people have too much steroid hormones in their bodies which can cause symptoms like diabetes, hypertension, or a swollen face) or Acromegaly (in which people have too much growth hormone in their bodies and can get enlargement of their hands, feet, face, and internal organs).

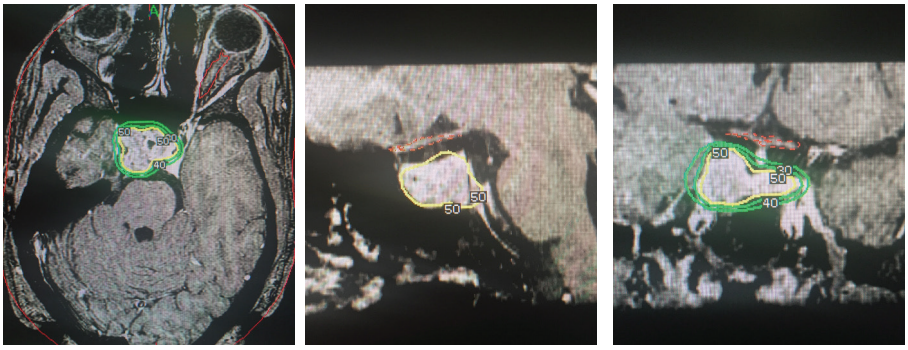
TREATMENT OPTIONS

Non-secretory microadenomas are usually treated with observation or medication. Non-secretory macroadenomas, Cushing's tumors and Acromegaly tumors are usually operated on transphenoidally (through the nostrils), frequently with an endoscope. Radiosurgery is an excellent choice for residual or recurrent tumor after surgery, non-secretory adenomas that are not causing much compression of the optic chiasm, and for patients who would not otherwise be good candidates for surgery.

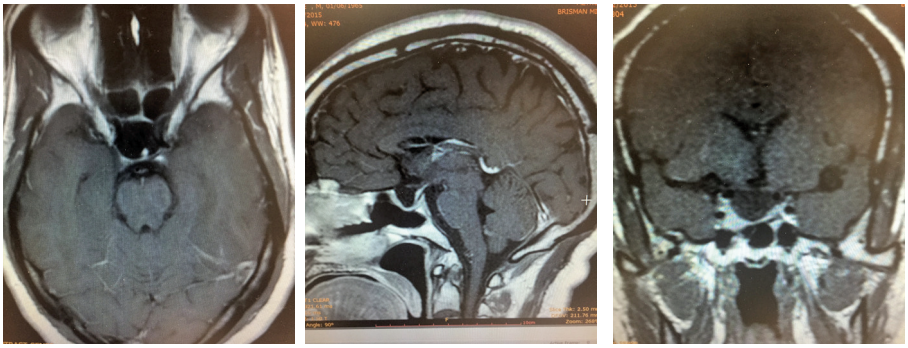
CASE STUDY 1

This is a 45-year-old man who, three years earlier, had undergone transsphenoidal removal of a non-secretory pituitary macroadenoma. The tumor had recurred. Gamma Knife (a type of radiosurgery) was performed. Six years later, the patients remained neurologically intact, and the tumor had almost completely disappeared. The patient takes Synthroid, but otherwise has normal endocrine function.

AT TREATMENT



AFTER TREATMENT



PROMPT APPOINTMENTS

Our experienced neurosurgeons are leaders in "bloodless" spine and brain surgical procedures, including endoscopic spine surgery, radiosurgery, and other advanced, minimally invasive techniques. Most appointments can be scheduled within five business days.

Scan here to request an appointment for a consultation.

23 YEAR OLD MAN WITH LARGE PITUITARY MASS AND VISION IMPAIRMENT

NSPC Brain & Spine Surgery

CASE STUDY 2

This is a 23 year old man who reported 3 months of blurry vision. He otherwise had no complaints. He felt that while his vision was clearly significantly impaired, it had not clearly worsened in the last 3 months.

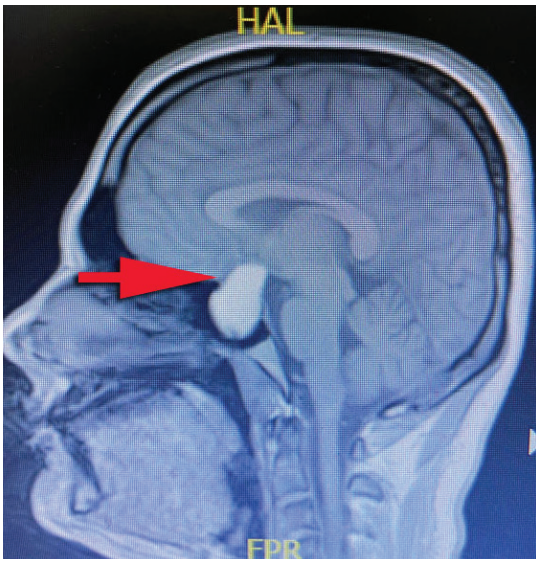


Figure 1

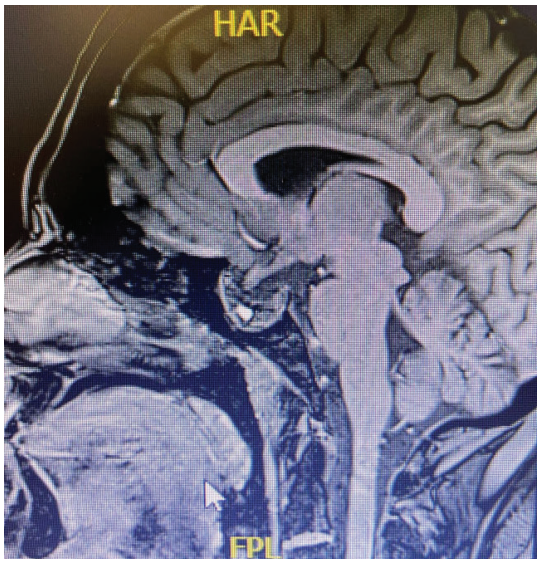


Figure 2

Ophthalmology Exam: The patient had first sought out care from an ophthalmologist. Formal visual field testing showed a profound bitemporal hemianopsia, a dense visual field cut in both lateral fields of view.

MRI Imaging: The patient was sent by his ophthalmologist for an MRI of the brain, with and without contrast. The MRI demonstrated a 2.8 x 2.1 x 1.7 cm pituitary mass compressing the optic chiasm, with slight extension into the left cavernous sinus. The mass had a cystic component of indeterminate nature (Figure 1).

Blood Tests: Blood tests, including endocrine tests were all normal except for an elevated prolactin level of 260 ng/ml.

Neurosurgical Assessment: The patient was sent for evaluation by Dr. Michael Brisman. The patient was found to have a bitemporal visual field cut, but was otherwise normal. The impression was a partly cystic macroprolactinoma with symptomatic compression of the optic chiasm.

Treatment: The patient was started on oral cabergoline (a dopamine agonist) twice a week. Soon after starting the medicine he noted his vision was starting to improve. He was also referred to an endocrinologist for evaluation.

Follow-up: Follow-up evaluation with the patient showed steady improvement in vision. At 4 months follow up, MRI showed near complete resolution of the tumor (Figure 2), and the patient reported his vision had completely returned to normal.

Discussion: Pituitary adenomas are one of the more common benign primary tumors of the brain. Common presentations of macroadenomas include visual impairment (due to compression on the optic nerves or chiasm), and endocrine abnormalities. Pituitary tumors that grow upward will commonly compress the optic chiasm and produce the classic "bitemporal hemianopsia" .

A normal blood prolactin level is generally under 20 ng/ml. Modest elevations, up to 100 ng/ml, can be seen with smaller prolactinomas, but also with other types of pituitary tumors due to the "stalk effect". Compression on the pituitary stalk itself blocks the delivery of dopamine from the hypothalamus to the pituitary gland. Dopamine inhibits the prolactin secreting cells of the anterior pituitary gland. Elevated prolactin levels in women will frequently present with galactorrhea (milky discharge from the breast) or irregular menstrual periods. Prolactinomas are almost always managed either medically or with observation only. Dopamine agonists such as Bromocriptine (Parlodel) or twice weekly Cabergoline (Dostinex), will usually normalize the prolactin levels and cause dramatic shrinkage of the tumor, as in this patient.

PITUITARY TUMOR WITH CUSHING'S DISEASE

Pre-op

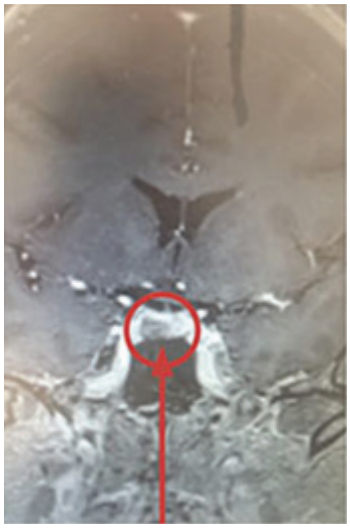


Figure 1

Post-op

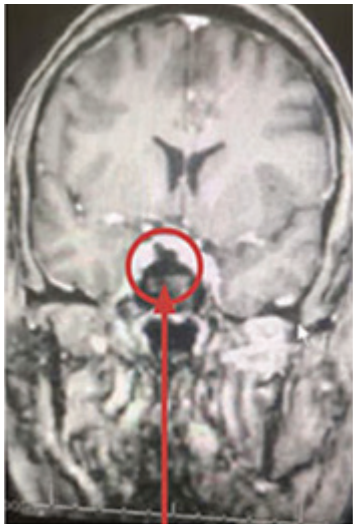


Figure 2

CASE STUDY 3

This is a 46 year old woman who had diabetes, hypertension, and progressive swelling of her face and body, and endocrine testing consistent with Cushing's Disease. MRI demonstrated a 9mm right sided pituitary adenema (fig 1 post contrast T1 weighted coronal image). She underwent endonasal endoscopic transsphenoidal removal of the tumor. Post operative imaging showed the tumor was completely removed (fig 2 post operative opst contrast coronal MRI image). Postoperative lab tests showed very low serum cortisol levels, consistent with a successful operation. She was placed on replacement hydrosortisone which was eventually weaned off. She felt much better and her diabetes and hypertension were much improved. Her subsequent endocine testing was consistent with a cure from her Cushing's Disease.

PITUITARY ADENOMA TRANSSPHENOIDAL

CASE STUDY 4

This is a 53 year old man with several months of persistent bothersome midline frontal headaches. Imaging was consistent with a pituitary macroadenoma, just touching the optic nerves (figure 1 post contrast T1 sagittal MRI image). Endocrine testing was normal. The patient underwent endonasal endoscopic transsphenoidal removal of the tumor. Post operative imaging showed a good removal of the tumor (figure 2 post contrast T1 sagittal MRI image). After surgery, the patient's headaches immediately and completely resolved.

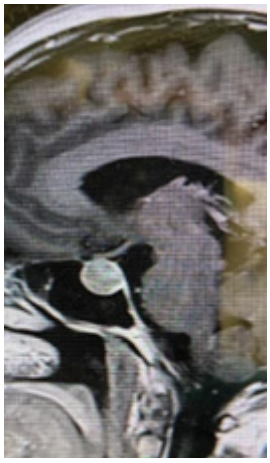


Figure 1

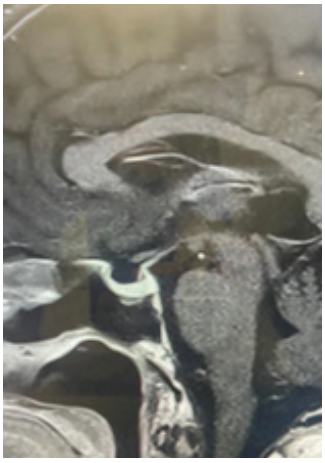


Figure 2

GIANT PITUITARY TUMOR

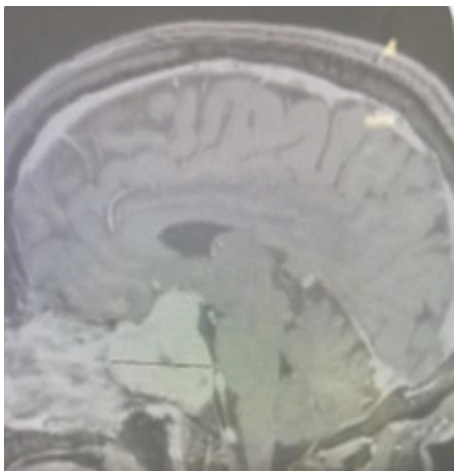


Figure 1

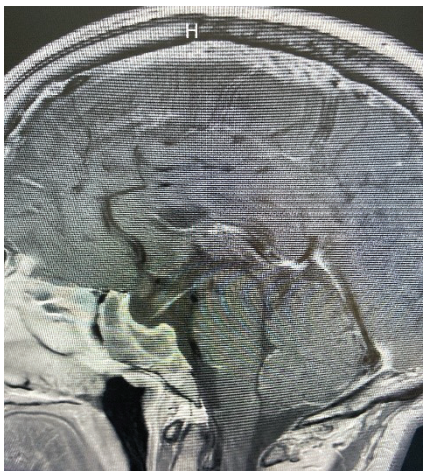


Figure 2

CASE STUDY 5

This is a 52 year old man with several months of progressive headaches and visual loss. Imaging showed a large pituitary region mass. His endocrine tests were normal except for a prolactin level of 8000 ng/ml. He was started on oral cabergoline twice a week. Soon thereafter his headaches had resolved and his vision had returned to normal. MRI imaging after several weeks of treatment showed dramatic reduction in the size of the tumor (Fig. 2 post contrast MRI Sagittal image).

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Board certified by the American Board of Neurological Surgeons and a Fellow of the American College of Surgeons, Dr. Brisman specializes in the treatment of Trigeminal Neuralgia and Brain Tumors. He serves as the Co-Medical Director of the Long Island Gamma Knife ® Center at Mount Sinai South Nassau and he has served as the Chief of Neurosurgery and Co-Director of the Neuroscience Institute at NYU Winthrop Hospital. In addition, Dr. Brisman has formerly served as President of both the Nassau County Medical Society and the New York State Neurosurgical Society.

DR. BRISMAN TREATS:

- Trigeminal Neuralgia
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- Meningiomas
- Brain Tumors
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- Pituitary Tumors
- Gliomas
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- Acoustic Neuromas
- Hemifacial Spasm
- Chiari Malformation

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