SAINT JOHN'S HEALTH CENTER
BRAIN TUMOR CENTER

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Endocrine-Inactive Pituitary Adenoma

Introduction

Endocrine-inactive pituitary adenomas do not produce excess hormones. Instead they cause symptoms due to pressure on the pituitary gland and/or on structures near the pituitary such as the optic nerves, optic chiasm and cavernous sinus.

Symptoms

Typical complaints of patients with an endocrine-inactive adenoma are those of pituitary gland failure or dysfunction (hypopituitarism), vision loss or headache, as well as symptoms related to tumor bleeding.

Hypopituitarism may manifest itself as fatigue, decreased mental function, weight gain, lethargy, joint pains, loss of sex drive, infertility and in women, irregular periods or amenorrhea (from low thyroid, adrenal insufficiency, low testosterone in men, low estrogen in women, and/or growth hormone deficiency). Almost all symptomatic endocrine-inactive adenomas are macroadenomas (over 1 cm in size). Occasionally, they grow quite large and into the cavernous sinus causing nerve compression and double vision. Some patients with large tumors may have hemorrhage into the tumor (pituitary apoplexy) causing rapid onset of headache, vision loss, double vision, and/or pituitary failure.

Visual loss may occur when adenomas grow superiorly out of the sella turcica causing optic nerve or optic chiasm compression. Pressure on the optic nerves causes loss of visual acuity in one or both eyes while pressure on the optic chiasm causes loss of peripheral vision (bitemporal hemianopsia).

Headaches may occur as the adenomas grow and stretch the surrounding coverings of the brain and pituitary gland, the dura. Pituitary tumor related headaches are typically in the fronto-temporal and forehead area.

Bleeding (pituitary apoplexy): This condition develops over hours to several days from hemorrhage and/or infarction of an adenoma. Symptoms may include headache, nausea, visual loss, double vision and confusion.

Diagnosis

Endocrine-inactive adenomas are diagnosed by imaging studies and hormonal testing. An MRI of the pituitary gland with gadolinium provides the most detail, although a general brain MRI or brain CT scan will reveal most pituitary macroadenomas. Hormonal testing is also essential to evaluate for pituitary gland failure (hypopituitarism). A complete pituitary hormonal analysis should be performed as described above and is ideally overseen by an endocrinologist.

Treatment

Endonasal Endoscopic Surgery*:* Endonasal transsphenoidal surgery is considered the first-line treatment for symptomatic endocrine-inactive adenomas or incidentally discovered macroadenomas over 15 mm in size or those that contact the optic nerves or optic chiasm. Because of improved tumor visualization, the endonasal endoscopic approach is rapidly becoming the preferred method for removal of most pituitary adenomas, including endocrine-inactive adenomas. The long-term surgical remission or cure rate is approximately 70-80% overall. Complete tumor removal is more likely with smaller tumors and those that do not invade the cavernous sinus; conversely, the total tumor removal rate is lower for larger tumors (over 3 cm) or tumors that invade the cavernous sinus.

Endonasal tumor removal improves visual acuity and visual field deficits in 75-90% of patients and headache resolution is seen in 80-90% of patients. Pituitary function is restored in only 20-50% of patients but new pituitary failure results from tumor removal in 4-5% of patients. Patients who do not have hormonal recovery after surgery will require hormone replacement therapy. Major surgical complications after endonasal surgery such as vision loss, bleeding, stroke, cerebrospinal fluid leak and meningitis are low when performed by experienced endonasal transsphenoidal neurosurgeons who often work collaboratively with a Head & Neck surgeon. Because the endonasal endoscopic approach is so effective and relatively safe, it is very rare that endocrine-inactive macroadenomas warrant transcranial removal.

Radiosurgery (SRT) or Stereotactic Radiotherapy (SRS): For patients who have residual tumor after the initial transsphenoidal surgery, focused radiation with SRT or SRS may be needed to control tumor growth. Both SRT and SRS halt tumor growth in at least 85-90% of patients. However, SRT and SRS may result in loss of normal pituitary function over 5 to 10 years. Neurologic complications such as visual loss and temporal lobe damage rarely occur with SRT and SRS.

Medical Therapy: There is no effective medical therapy that reliably halts growth of endocrine-inactive adenomas.

For a visual tour of endonasal and keyhole surgery for brain, pituitary & skull base tumors, visit our BTC YouTube channel: *www.youtube.com/user/BrainTumorCenter*