Lymphocytic hypophysitis is an uncommon autoimmune inflammatory disorder affecting the pituitary gland, most often occurring in women of child-bearing age, usually late in pregnancy or shortly after childbirth. Patients typically seek medical attention because of intrasellar mass effects and pituitary hypofunction, with headache, visual deficits, and deficiency in adrenocorticotropic hormone secretion being the usual presenting features. This condition can also present as pituitary apoplexy.

Uncommonly, the disorder has also been known to affect men, women past child-bearing age, and children. An equal incidence according to sex was reported in an earlier study performed at our institution. Microscopically, the gland is infiltrated with lymphocytes, macrophages, and plasma cells, and antipituitary antibodies—notably secretogranin II—have been isolated. This condition can also present as pituitary apoplexy.

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For persistent lymphocytic hypophysitis, GKS is a reasonable treatment option. (DOI: 10.3171/2009.6.JNS081176)

**Key Words**
- lymphocytic hypophysitis
- Gamma Knife surgery
- radiosurgery
- pituitary disorder

**Case Report**

**History and Examination.** This 37-year-old pregnant woman (para 1, gravida 2) was referred to the Neuroendocrine Center at the University of Virginia. She underwent evaluation for a large pituitary mass that had been diagnosed 3 weeks previously. At that time, she had experienced sudden-onset diplopia and was found to have a...
right cranial nerve VI nerve palsy. She had no significant medical history, except a normal pregnancy resulting in the delivery of a full-term baby girl 3 years earlier. The patient had done well through her first 18 weeks of pregnancy. In the 21st week, she experienced acute onset of double vision, which was not accompanied by headache, nausea, or vomiting. The double vision was initially evaluated by an ophthalmologist, and the patient was found to have normal visual acuity and fields but a right cranial nerve VI palsy. Subsequent noncontrast-enhanced MR images revealed a large sellar and suprasellar mass abutting the right carotid artery and extending to involve the right cavernous sinus (Fig. 1A).

During her third trimester, the patient underwent transsphenoidal decompression, removal of intrasellar tissue, and decompression of the right cavernous sinus. Her immediate postoperative course was uneventful apart from the development of transient postoperative diabetes insipidus, which was managed conservatively. The diabetes insipidus resolved a few days postoperatively.

**Histopathological Analysis.** Tissue submitted for pathological analysis was composed of dura mater and pituitary gland fragments. The dura mater showed a dense inflammatory infiltrate composed of mature lymphocytes invading the layers of dense connective tissue (Fig. 2A). Analysis of the pituitary gland sample revealed it to be both anterior and posterior pituitary gland with preservation of the cytoarchitecture and reticulin network (Fig. 2B and C). Although inflammatory cells were seen rarely on H & E staining (Fig. 2B), immunohistochemical stains for leukocyte common antigen (CD45) demonstrated a mild to focally moderate inflammatory (mainly lymphocytic) infiltrate of the pituitary parenchyma (Fig. 2D). There was no evidence of fibrosis within the gland as seen on stains with H & E and Wilder’s reticulin (Fig. 2B and C). These histopathological findings were consistent with lymphocytic hypophysitis.

**Postoperative Course.** The patient had relief of her diplopia for 2 weeks. However, an MR imaging scan performed 5 weeks later revealed a right sellar mass extending into the cavernous sinus. One month after the transsphenoidal surgery, she had a low free T4 level and was treated with thyroid hormone. Concerns regarding radiation exposure from any radiosurgical treatment during pregnancy prompted the treating clinicians to recommend steroid (prednisone) therapy, and within 2 weeks of initiation of therapy she became symptom free. She had a successful delivery by cesarean section, and remained symptom-free on steroid therapy. However, each time the steroids were discontinued, her diplopia recurred. Because of the adverse effects of long-term steroid therapy, including the development of Cushing’s syndrome, she was referred for radiosurgery.

**Radiosurgery.** The patient underwent stereotactic radiosurgery at the University of Virginia Gamma Knife Center (Fig. 1B). Stereotactic MR imaging was performed and a 3D stereotactic treatment plan was created to treat the sellar and cavernous sinus contents. Sixteen isocenters and 1 dose matrix were used in the treatment. A volume of 3.5 cm³ was treated with a prescription dose of 15 Gy to the 50% isodose line.

**Postradiosurgery Follow-Up.** The prednisone dose was tapered beginning 3 weeks after radiosurgery. Four weeks after treatment, she was able to discontinue prednisone therapy altogether, without recurrence of symptoms. She continues to be asymptomatic without prednisone at > 12 months after GKS. Recent MR images obtained in the patient showed no evidence of a reduction in the size of the sellar contents (Fig. 1C). No new hormone deficits, beyond her hypothyroidism, which predated radiosurgery, have been diagnosed. The patient has normal menses and gonadal function, and is attending regular follow-up with a neurosurgeon, endocrinologist, and a neuroophthalmologist.

**Discussion**

The optimal treatment of lymphocytic hypophysitis remains the subject of debate. Initial transsphenoidal surgery to relieve mass effect has been associated with recurrence, more so if there is cavernous sinus involvement. Initiation of steroid therapy offers potent medical management of the condition (provided the diagnosis of a nonfunctioning pituitary adenoma has been excluded), but the adverse effects of long-term steroid therapy limit its use as a solution. Success has earlier been reported with the use of stereotactic radiotherapy using a dose of 24 Gy given in 12 treatments of 200 cGy per fraction. This is the first reported case of lymphocytic hypophysitis successfully treated with stereotactic radiosurgery using the Leksell Gamma Knife. Symptomatic relief was achieved using a prescription dose of 15 Gy. This strategy seems to be a prudent option for patients with lymphocytic hypophysitis whose condition has not responded to conventional surgery and medical therapy. Follow-up to assess for clinical recurrence and delayed hypopituitarism must be performed. At our center, delayed hypopituitarism after radiosurgery has been ob-

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**Fig. 1.** Coronal MR images obtained in the patient with lymphocytic hypophysitis at presentation (A), the day of GKS (B), and 9 months post-GKS (C).
served in ~ 20–30% of patients with pituitary adenoma; hypopituitarism typically occurs within the first 5 years following radiosurgery.\textsuperscript{14}

**Conclusions**

Gamma Knife surgery may be a viable treatment option for patients with lymphocytic hypophysitis in whom surgical or medical management has failed. Experience with a larger number of such patients will provide more information on this method of treatment.

**Disclaimer**

The authors report no conflict of interest concerning the materials or methods used in this study or the findings specified in this paper.

**References**


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