

Case Report

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A Surgical Case of Lymphocytic Hypophysitis with Progressive Visual Worsening

Lymphocytic hypophysitis is a clinically rare disease, and it has been known to be an autoimmune disease which mainly affects pregnant women at the end of gestation or right after delivery. The authors experienced a case of lymphocytic hypophysitis in a 29-year-old pregnant woman with rapid progressing visual disturbance. Sella MRI showed a mass-like lesion of hypophysis and hypertrophy of pituitary stalk with evidences of hypopituitarism. Cesarean section was done and then TSA was performed. The pathologic diagnosis was lymphocytic hypophysitis. After TSA, visual acuity was improved and visual field defect was recovered. She was given thyroid hormone replacement therapy because of transient partial hypopituitarism for 6 months after surgery. One must consider the probability of lymphocytic hypophysitis, if there are alteration of visual acuity and visual field defect which aggravate rapidly during pregnancy due to mass effect, decreased serum hormonal levels shown in hypopituitarism and sella MRI findings of hypertrophy of pituitary stalk and enlargement of pituitary gland.

KEY WORDS : Lymphocytic hypophysitis · Neurohypophysitis · 3rd trimester pregnancy.

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INTRODUCTION

Lymphocytic hypophysitis is a clinically rare disorder of the hypophysis, and depending on the location of the lesion, it is classified into adenohypophysitis and infundibuloneurohypophysitis^{4,6,13,14}. It has been known to be an autoimmune disease which mainly affects pregnant women at the end of gestation or right after delivery. It is occasionally associated with other autoimmune diseases including thyroiditis, pernicious anemia, adrenalitis, and systemic lupus erythematosus¹⁶. Preoperatively, it is difficult to differentiate the lesion from pituitary adenoma, one usually arrives at the diagnosis of lymphocytic hypophysitis after performing trans-sphenoidal approach (TSA) under the impression of pituitary adenoma. The authors report a case of lymphocytic hypophysitis at pregnancy with a literature review.

CASE REPORT

A 29-year-old primiparous female was referred to our department at her 37th weeks of pregnancy. She complained of a progressive visual disturbance and headache which began 4 weeks before admission. Sella MRI showed 2.3 × 2.0 × 1.5 cm sized dumbbell shaped pituitary mass and hypertrophy of pituitary stalk (Fig. 1). Visual acuity examination was 1.0/0.9 (OD/OS) and visual field examination showed bitemporal hemianopsia at admission (Fig. 3A). Hormone studies revealed deficiency of free T4 (0.23 ng/dl), TSH (<0.1 mIU/L) and cortisol (4.2 µg/dl) (Table 1). Neurological examination and other physical findings such as physical evidence of adrenal insufficiency and hypopituitarism were unremarkable.



Fig. 1. Sella magnetic resonance image showing well enhanced pituitary mass and hypertrophy of pituitary stalk (A, B).

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Table 1. Hormonal levels before surgery and after surgery

	Before surgery	31 months after surgery	Reference Ranges
Cortisol ($\mu\text{g/dl}$)	4.2	12.3	Morning, 9–23
Free T4 (ng/dl)	0.23	1.25	0.77–1.94
Thyroid stimulating hormone (mIU/L)	<0.1	1.8	0.3–4.0

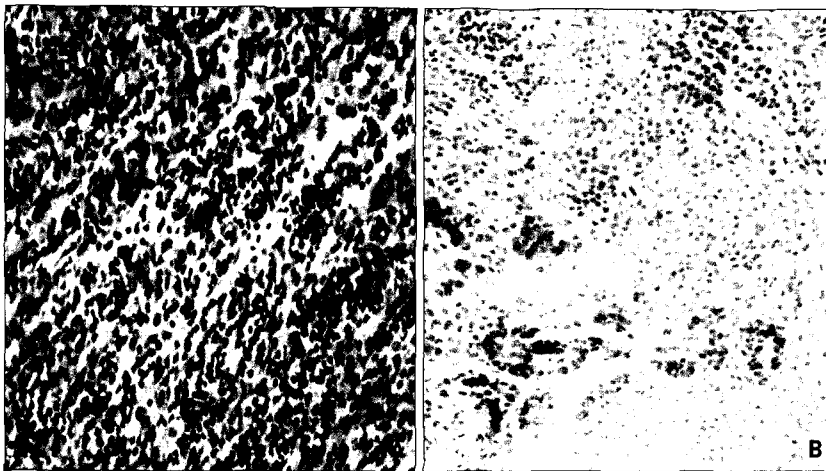


Fig. 2. Histological appearance of lymphocytic hypophysitis shows dense lymphocytic inflammation (A : H&E, $\times 400$). Immunohistochemical staining for CD3, a T cell marker reveals diffuse positive in the lymphocytes (B : $\times 200$).

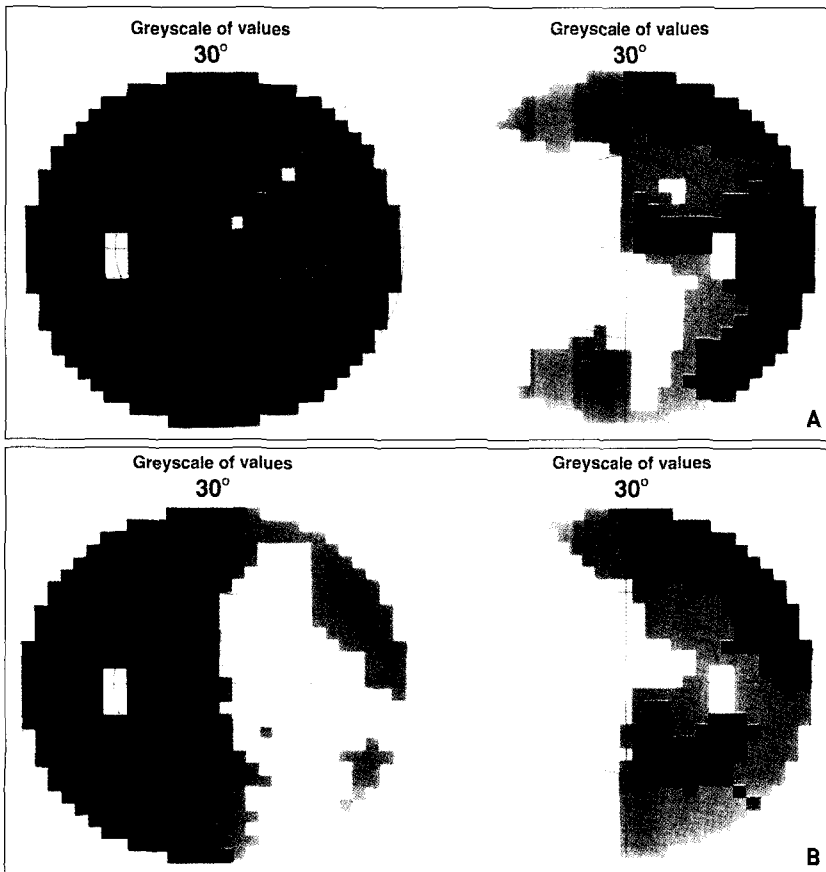


Fig. 3. Visual field test before and after surgery (A, B).

The authors presumed the pituitary macroadenoma according to the symptoms, serum hormone levels and MRI findings on the beginning of treatment. At 3rd hospitalized day, visual disturbance was aggravated rapidly (OD/OS : 0.1/0.1) and patient underwent Cesarean section. And, the day after Cesarean section, we performed TSA under impression of pituitary apoplexy. The lesion was hard and fibrous, therefore partial resection was done during the operation. Pathologically, the lesion showed pituitary gland tissue and invasion of inflammatory cells and fibrosis which all led to the diagnosis of lymphocytic hypophysitis (Fig. 2). After TSA, visual acuity was improved (OD/OS : 1.0/1.0) and visual field defect was recovered (Fig. 3B). Six months after surgery, thyroid hormone levels returned to normal range (free T4 : 1.04 ng/dl, TSH : 1.2 mIU/L) and she discontinued to take thyroid hormone replacement. At the 31st postoperative month, sella MRI showed no enhancing mass (Fig. 4) and serum hormone level was within normal range.

DISCUSSION

Lymphocytic hypophysitis is known to be an autoimmune disorder, and depending on the location of the lesion, it is classified into adenohypophysitis and infundibulo-neurohypophysitis^{4,6,13}. This disorder is prone to occur in women at the end of gestation or postpartum, and mortality rate of women is as high as 50 percent⁹. The most common clinical symptom during pregnancy is headache and one must differentiate the headache from tension headache, migraine and pre-eclampsia³. It also cause altered visual acuity and visual field defect. If the lesion involves the anterior lobe of pituitary gland, partial or total hypopituitarism may occur and if the posterior lobe of pituitary gland



Fig. 4. At postoperative 31 months, sella magnetic resonance image showing no enhancing mass (A, B).

is involved, diabetes insipidus may occur. In healthy pregnant women, the numbers and sizes of lactotroph cells in the pituitary gland increase and the size of the pituitary gland increases due to the hypertrophy and hyperplasia of lactotroph cells influenced by the increment of serum estrogen level¹⁰. These make 10 times higher serum prolactin levels during the gestational period, compared to unpregnant women without causing significant intracranial pressure effect⁸. During the pregnancy, pituitary gland grows 0.08 mm in the diameter per week giving sella MRI finding of 45% enlargement compared to that of unpregnant women⁷. In case of pituitary adenoma, the tumor growth rate was 1% in microadenoma and 5-20% in macroadenoma at the 2nd and 3rd trimester of pregnant¹⁷. In the two-thirds of lymphocytic hypophysitis, pregnancy is related to the disease. Fifty percent of lymphocytic hypophysitis during pregnancy occur at the 2nd and 3rd trimester and the remaining 50% at the postpartum 6 months. The sella MRI findings of lymphocytic hypophysitis show well enhanced mass in the sella and suprasellar regions, hypertrophy of pituitary stalk and loss of high signal intensity of pituitary gland which is normally found on T1-weighted image^{12,13}. Therefore, loss of high signal intensity on T1-weighted image, which is characteristic finding of idiopathic central diabetes insipidus, can be attributed to the progression of lymphocytic infundibulo-neurohypophysitis. The gross pathological findings of lesion are dense and fibrotic pattern unlike the pituitary adenomas. And, microscopically, characteristic findings of the lesion are generalized infiltration of the lymphocytes and plasma cells, parenchymal destruction and fibrosis, and destruction of pituitary gland¹. The natural history and pathogenesis of lymphocytic hypophysitis are documented in wide variations from spontaneous resolution to death by progression of panhypopituitarism⁹. The management of lymphocytic hypophysitis is still controversial. The conservative medical treatment of high dose of corticosteroid and hormonal replacement therapy may show good prognosis^{2,15}, but surgical decompression of lesion allows excellent clinical

result in case of altered visual acuity and visual field defect⁹ and one can consider surgical management in cases of side effect of high dose steroid therapy and relapsing¹¹. In this case, although we performed TSA under impression of pituitary macroadenoma, the clinical symptoms of visual disturbance and visual field defect were improved after surgery and serum hormone levels were normalized. It is difficult to determine adequate treatment of lymphocytic hypophysitis during pregnancy, because diagnosis must be confirmed by surgical procedure and one must consider the fetal condition affected by the disease and surgery. However, the differential diagnosis is important prior to surgery, because hypopituitarism due to lymphocytic hypophysitis, which does not company with altered visual acuity and visual field defect by mass effect, could be improved through the administration of steroid and hormonal replacement therapy^{2,15}.

CONCLUSION

In this lymphocytic hypophysitis case, the 3rd trimester pregnant woman with rapidly progressed visual acuity alteration and visual field defect, TSA after Cesarean section delivery allowed good clinical outcome mainly, the improvement of visual acuity alteration and visual field defect, and normalization of serum hormonal level. One must consider the probability of lymphocytic hypophysitis, if there are alterations of visual acuity and visual field defect which aggravate rapidly during pregnancy due to mass effect, decreased serum hormonal levels shown in hypopituitarism and sella MRI findings of hypertrophy of pituitary stalk and enlargement of pituitary gland.

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