

Thymectomy for myasthenia gravis

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ABSTRACT : The effect of thymectomy on elimination of a myasthenic symptom was clinically evaluated. The operative approach was primarily extended thymectomy of choice via midsternotomy in all but one of transcervical approaches. Most of them belonged to Osserman II b and II a of the disease type.

Thirteen cases were in combination with thymoma and thirty-five were not in combination. Thymectomy yields a 53.8% effectiveness rate for patients with thymoma and a 65.7% for patients without thymoma. There was no definitive relationship between the operation effectiveness and the suffering duration of time. However, aggravation and no improvement of a clinical sign after thymectomy were observed in patients with a severe or moderate degree of germinal center formation.

INTRODUCTION

Great strides in the field of thoracic surgery as well as in the knowledge of respiratory care have been achieved. Thymectomy has been done safely with refined technique and meticulous postoperative cares. Therefore, thymectomy has become the first choice of treatment for myasthenia gravis.

The aim of this study is to evaluate the efficacy of thymectomy for myasthenia gravis on the basis of a result of clinical experience.

PATIENTS

During the past 23-year period from January 1965 to December 1987, 48 thymectomy for myasthenia gravis were clinically analyzed. Females were predominant in a ratio of 15 : 33 according to the distribution of sex in this group as shown in Table 1.

Table 1. Patients

| AGE | MALE | FEMALE | TOTAL |
|-----|-----------|-----------|-----------|
| ~19 | | 1 | 1 |
| 20~ | 6 | 5 | 11 |
| 30~ | 1 | 10 | 11 |
| 40~ | 6 | 12 | 18 |
| 50~ | 1 | 2 | 3 |
| 60~ | | 2 | 2 |
| 70~ | 1 | 1 | 2 |
| | 15 (37.6) | 33 (39.6) | 48 (38.9) |

Age distribution showed a peak in the 4th decade, followed by the 2nd and 3rd decade in the order. According to OSSERMAN'S classification, most were II b and/or II a and a few were I and/or III. Thirteen were accompanying thymoma and thirty-five were non-thymoma. The suffering period from onset in most cases were 2 to 4 year duration, ranging from 3 months to 18 years and 3 months, as shown in Fig. 1.

As for an operative approach, midsternotomy

was applied in 44 patients, right thoracotomy in 3 including 2 cases in whom pulmonary resections were combined and transcervical approach in 1. Thymectomy yielded a favorable result of improvement in 53.8% of patients with thymoma, in contrast, in 65.7% of patients without thymoma as shown in Table 3.

The suffering periods from onset were compared and improvement was obtained from the period from 6 months to 3 years. However, aggravation was also seen regardless of the suffering period of disease. No change in clinical sign is seen in patients with short and long suffering periods, and efficacy of thymectomy did not reveal a constant outcome with varying variety. As shown in Table 4, in all the 4 patients in whom a clinical sign was aggravated following thymectomy demonstrated a histologically significant formation of germinal centers and 10 out of 14, in whom clinical sign did not change nor improved,

Table 2. Disease stage classification Osserman classification

| Osserman type | Male | Female | Total |
|---------------|------|--------|-------|
| I | 4 | 1 | 5 |
| II a | 8 | 12 | 20 |
| II b | 2 | 19 | 21 |
| III | 1 | 1 | 2 |
| | 15 | 33 | 48 |

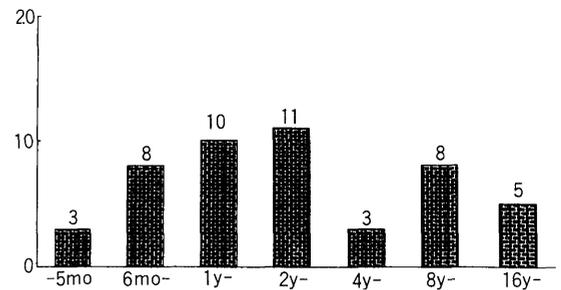


Fig. 1. Suffering period from onset

Table 3. Efficacy of thymectomy for myasthenia gravis

| | with thymoma | without thymoma | total |
|--------------------|--------------|-----------------|------------|
| complete remission | 1 | 4 | 5 |
| improvement | 6 (53.8%) | 19 (65.7%) | 25 (62.5%) |
| no change | 3 | 11 | 14 |
| aggravation | 3 | 1 | 4 |

showed moderate or severe degrees of germinal center formation by histologic examination. Furthermore, a long-term prognosis closely correlated with the degree of histologically confirmed germinal center formation.

DISCUSSION

Since Blalock first reported that thymectomy for myasthenia gravis yielded favorable result, thymectomy has been prevalent for the treat-

Table 4. Relationship between effect of thymectomy and germinal center

| | germinal | | | |
|--------------------|----------|--------|----------|--------|
| | no | slight | moderate | severe |
| complete remission | 5 | 3 | 1 | 1 |
| improvement | 25 | 18 | 5 | 2 |
| no change | 14 | 4 | 4 | 6 |
| aggravation | 4 | | | 4 |

ment of myasthenia gravis. It was accepted that thymectomy is of great benefit for patients with thymoma or abnormal formation of germinal center, as proved by histologic examination.

It is believed that the thymic gland plays an important role in regulation of the immune response to the host with intricate activations with variety. However, it is not clear as to what kinds of mechanisms act to cause

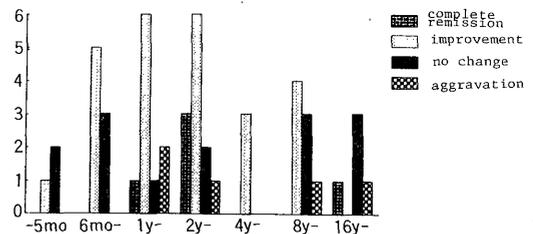


Fig. 2. Efficacy of thymectomy for myasthenia Gravis in relation to suffering period

muscle weakness in the pathogenesis of myasthenic gravis.

In 1970, transcervical approach was recommended for thymectomy to minimize postoperative complications, damage to respiratory function as well as to enhance cosmetic effects. However, it has become clear that surgical outcome of transcervical approach is unsatisfactory as compared with that of mid-sternotomy. Since that time, extended thymectomy has been recommended. It includes complete resection of fatty tissues that means a removal of aberrant thymic tissues among the fatty tissues in the anterior mediastinum. A favorable outcome of surgery is reported as being delayed remission. It showed improvement of 50% for 5 years in non-thymoma patients with improvement year by year, although an efficiency of thymectomy reaches 80% at 3 months and 90% at 1 year, in contrast to 70% at 3 month in thymoma patients, demonstrating a remarkable improvement at an early stage.

These results are superior to those obtained by drug therapies and it is helpful to eliminate a needed dosis of drugs. It is well known that patients aged over 40 years is not necessarily a suitable candidate for thymectomy. PALETTO⁶⁾ reported that thymectomy in childhood holds promise of a satisfactory result.

In this series, age is not a handicap to yield a satisfactory result of surgery. The fact that the longer the suffering period, the less the effect of surgery, may be true because surgical outcome closely correlate with the intensity of histological germinal center formation.

It is widely accepted that antiacetylcholin receptor antibody plays a key role in patients with myasthema gravis. The germinal center is composed of B-cells. On the other hand, T-cells are differentiated by the help of a function of the thymic gland, although it is not so forceful. From the above facts, it is reasoned that thymectomy for myasthenia gravis is of help to eliminate or improve a clinical sign. It is a reflection of an efficacy of thymectomy that leads to reduction of the level of antiacetylcholin receptor antibody. It is very difficult to determine preoperative expectation of the effect of thymectomy on

myasthenia gravis.

It is defined that myasthenia gravis accompanys functional abnormality of the thyroid and parathyroid glands and its pathogenesis is much complex. Surgeons should be borne in mind that aberrant thymic gland tissue in the fatty tissues of the anterior mediastinum more frequently hold a tumor and extended thymectomy is mandatory for better surgical outcome.

In this study, there was no experience with the patients in whom the clinical sign was aggravated following surgery as well as in whom reoperation was required. It is emphasized to cite that accurate detection of the presence of aberrant thymic gland is of great value to make surgical outcome much more favorable.

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