

Surgery for myasthenia gravis

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ABSTRACT : The effect of thymectomy on myasthenia gravis was evaluated in the 48 patients with thymectomy for myasthenia gravis in the First Department of Surgery, Nagasaki University School of Medicine.

The surgical approaches were done by midsternotomy in 44, by right thoractomy in 3 and by transcervical route in 1 respectively. As a rule, extended thymectomy was mainly applied. The disease stages in most cases included the types of Osseman IIb and/or IIa.

The effect of thymectomy on myasthenia gravis was compared between the patients with and without thymoma. The effect of thymectomy for patients without thymoma was superior to that for patients with thymoma. There was no close relationship between the suffering time and the effect of thymectomy. Interestingly enough, the surgical outcome for those who had moderate or severe formation of germinal center in the resected thymic glands was not satisfactory and some aggravated following thymectomy.

INTRODUCTION

Advances in thoracic surgery made it possible to perform thymectomy with safety in wide clinical use. Thymectomy is now the main therapeutic tool of choice for myasthenia gravis in accordance with ensurance of post-operative respiratory care. Thymectomy is at first selected for the treatment of myasthenia gravis. In this study, the results of thymectomy for myasthenia gravis were evaluated on the basis of clinical experience.

CASES

The 48 patients with thymectomy for myas-

thenia gravis were subjected to this study during a period from January 1965 to December 1987 in the First Department of Surgery, Nagasaki University School of Medicine. According to the distribution of sex in this group, females were predominant in a ratio of 33 to 15. The most predominant age was in the 4th decade, next was 2nd and 3rd decade as shown in Table 1.

The symptoms were classified by Osseman classification as shown in Table 2. Most were Osseman IIb and IIa and a very few included the types of Osseman I and III. Thirteen patients had thymoma and the others had non-thymoma. The suffering duration ranged from 2 years to 4 years in most cases, and the next was from 1 year to 2 years, followed by

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)

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

the duration less than 1 year and more than 8 years as shown in Fig. 1.

The surgical approaches comprised of mid-sternotomy in 44, right thoracotomy in 5 including combined resection with the lung in 2 and transcervical route in 1.

The effect of thymectomy on myasthenia

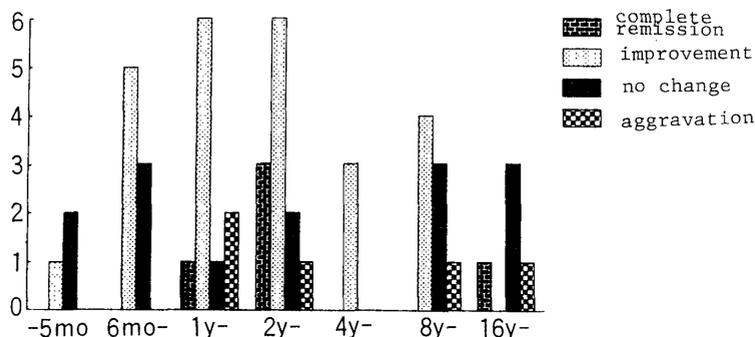


Fig. 1. Efficacy of thymectomy for myasthenia Gravis in relation to suffering period

Table 3. Efficacy of thymectomy for myasthenia gravis

	with thymoma	without thymoma	total
complete remission	1	4	5
improvement	6 (53.8%)	19 (62.7%)	25 (62.5%)
no change	3	11	14
aggravation	3	1	4

gravis was regarded as improvement in 53.8% of thymoma patients and 65.7% in non-thymoma as shown in Table 3. In the relationship between surgical effect and suffering duration, the effect of thymectomy was prominent in patients with the suffering duration ranged from 6 months to 3 years. However, aggravated patients who experienced the same suffering duration, demonstrated a result of various surgical outcome. In patients with shorter or longer suffering time, the surgical outcome was nearly unchanged. Meanwhile, in patients with aggravated symptoms following thymectomy, pronounced formation of germinal center in the resected thymic glands was seen. The degree of formation of germinal center proportionated to the survival time and alleviation of patients' suffering as shown in Table 4.

Table 4. Relationship between effect of thymectomy and germinal center

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

The surgical outcome was consistent with the degree of germinal center. The more the degree of formation of germinal center increases, the more surgical outcome becomes detrimental. Most of those in whom germinal centers were severe in resected specimens showed a result of no change following thymectomy and/or aggravated postoperative courses.

DISCUSSION

Since BLALOCK¹⁾ reported 2 successful cases treated with thymectomy for myasthenia gravis, it has been focused on thymectomy. In Japan, thymectomy has been prevalent since 1960. However, myasthenia gravis is still dubious in its pathogenesis.

In 1970, the transcervical approach for thymectomy has become common in the United states of America. The reasons for common application of thymectomy were that it had less postoperative complication, good cosmetic wound healing, and easy respiratory support.

However, it was defined that surgical outcome of thymectomy via transcervical approach was inferior to that via midsternotomy. At present extended thymectomy including a resection of the surrounding fatty tissues is recommended for myasthenia gravis²⁾. Palliation after thymectomy in thymoma patients was obtained in 20%. On the other hand, in non-thymoma patients, muscular weakness after thymectomy was gradually improved and it rose to 50% at 5 years showing delayed remission. Meanwhile, effectiveness of thymectomy was 80% at 3 months, 90% at 1 year in non-thymoma patients although it was 70% at 3 months, demonstrating relatively satisfactory result in the early stage of thymoma patients³⁾.

These showed the superiority of the results to medical treatments⁹⁾. Even if medical treatments are required after thymectomy, the dosis of drugs makes it possible to reduce significantly.

In terms of patient's age, it is well known that the indication for thymectomy is to be limited to patients of less than 40 years old, and even in childhood thymectomy is of great benefit in improving symptoms of myasthenia

without functional defect of the thymic gland⁶⁾. There was no definitive difference in surgical outcome after thymectomy between different ages. In this series the old patients of maximum age of 72 years showed an improvement under less dosis of maintenance drugs. It is accepted that the shorter the suffering time from myasthenia, the better the surgical outcome ensures. However, in this series the duration of suffering were not necessarily implicating. It is well known that the severity of histologic generation of germinal centers influences the effect of thymectomy for myasthenia gravis. The results of this study was consistant with this concept.

It is accepted that the degree of generation of germinal centers proportionates to the duration of suffering time. Therefore surgical outcome may be influenced by the degree of generation of germinal centers as well as the duration of suffering time.

The germinal center is composed of B cells, and the thymic gland plays a role in defferentiating premature cells as well as in generating antiacetylcholine receptor antibody (anti-Ach RAb). However, as its activity is very weak, so the effect of thymectomy is not valid. Furthermore, it is said that anti-AchRAB is generated at the site of peripheral lymphoid tissues. It is believed that the thymic gland plays a role in leading to myasthenic abnormality. The pathogenesis is very complex in relation to functional ablation of the parathymic glands which has identical origin in the genesis¹¹⁾.

In conclusion, thymectomy is effective in improving myasthenia gravis and thymectomy of choice should be first recommended.