THYMECTOMY FOR MYASTHENIA GRAVIS: PESHAWAR EXPERIENCE OF 27 CASES IN FIVE YEARS

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ABSTRACT

Objective: *To determine the safety and efficacy of Thymectomy for myasthenia gravis.*

Material and Methods: *This observational descriptive study was conducted at Departments of Cardiothoracic Surgery and Neurology Lady Reading Hospital Peshawar from January 2002 to December 2006. Computerized clinical data of 27 diagnosed cases of myasthenia gravis that underwent thymectomy were retrospectively analyzed. Patients who were unfit for surgery were excluded from the study. CT scan was done in all patients apart from routine investigations. Preoperative medication included anticholinesterase drug. They all underwent Thymectomy via median sternotomy.*

Results: *A total of 27 patients (09 males and 18 females) with a mean age of 30.5 years (range 15-50 years) were analyzed. The preoperative duration of the disease ranged from 0.5 to 120 months (mean=25.72 +/- 30.68 months). According to the Myasthenia Gravis Foundation of America (MGFA) clinical classification, 20 (74.07%) patients were in stage II while 7 (25.925%) patients were in stage III. The histology of thymus glands consisted of hyperplasia in 12 (44.4%) patients, normal in 10 (37.1%), atrophic thymus in 3 (11.1%) and thymoma in 2 (7.4%) patients. Hospital mortality was 7.4% (n=2/27) while morbidity was 3.7% (n=1/27). The mean follow up period was 31.5 months (3-63 months). Complete remission was achieved in 55.55% (n=15/27) patients, and marked improvement in 25.92% (n=7/27), for a total benefit rate of 80%. Five (18.51%) patients remained unchanged and had no clinical improvement.*

Conclusion: *Thymectomy is a safe and effective treatment for patients with myasthenia gravis.*

Key words: *Myasthenia Gravis, Thymectomy, Peshawar.*

INTRODUCTION

Thymectomy for myasthenia gravis (MG) was first performed in 1936 by Blalock.[1] Since then the removal of the gland has become established as a method of treatment of the disease. Myasthenia gravis is an acquired relapsing and remitting autoimmune disorder associated with acetylcholine receptor deficiency at the motor end plates, caused by complement fixing antibodies. It[2] has been suggested that auto reactivity in myasthenia gravis is initiated with in the thymus. There is a biphasic mode of distribution with a tendency for population of young women and elderly men to be affected. Women are involved twice as often as men. The mean age of onset of symptoms is 26 years, men tend to be affected at a later age and tend to have higher incidence of thymoma.[3] Weakness and fatigue with activity are the hallmarks of myasthenia gravis.[4]

Today, even with the advancement in the medical therapy, thymectomy remains an integral part of treatment of patient with severe forms of the disease.[5] Controversy, however, still exists about the indication and timing of surgery[6,7] The most appropriate surgical approach, moreover, is still under question.[8-10] Although a more aggressive approach may lead to better results, the incidence of major complications and postoperative morbidity is also increased. All these question whether the long-term results of Thymectomy justify the potential morbidity of the procedure? The issue of the particular disease stage at which surgery is more beneficial also remains unresolved. Present study was designed as to determine the safety and efficacy of Thymectomy for myasthenia gravis.

THE MYASTHENIA GRAVIS FOUNDATION OF AMERICA (MGFA) CLINICAL CLASSIFICATION

MGFA Class	Clinical Manifestations
I.	Any ocular muscle weakness; all other muscle strength is normal
II.	Mild weakness affecting other then ocular muscles, with or without ocular muscle weakness
III.	Moderate weakness affecting other then ocular muscles, with or without ocular muscle weakness
IV.	Severe weakness affecting other then ocular muscles, with or without ocular muscle weakness
V.	Defined by intubation, with or without mechanical ventilation (except for postoperative management), or the use of feeding tube.

Table 1

MATERIAL AND METHODS

This descriptive observational study was conducted at Departments of Cardiothoracic surgery and Departments of Neurology, Post Graduate Medical Institute, Lady Reading Hospital; Peshawar from January 2002 to December 2006. Computerized clinical data of 27 cases of Thymectomy for myasthenia gravis was retrospectively analyzed. All patients having myasthenia gravis and fit for surgery were included in this study. Those having no myasthenia gravis and unfit for surgery were excluded from the study. They all underwent Thymectomy via median sternotomy. Preoperative medication included anticholinesterase drug.

Indications for surgery included

- Generalized myasthenia symptoms resistant to medical treatment,
- Refractory symptoms and
- Young patients

The preoperative severity of the disease was classified according to the myasthenia gravis foundation of America (MGFA) clinical classification (table 1) whereas post surgical clinical status of the patient was assessed according to the MGFA post intervention status. [11]

CT scan was done in all patients apart from routine investigations. All patients had clinical follow-up by the same team of neurologists.

Operative Technique:

The operative technique remained constant during study period.

The Trans-sternal Thymectomy was performed through a full sternotomy. The peri-thymic fat of the anterior mediastinum was removed en bloc with the gland. The resection margins were the glands superiorly, the diaphragm inferiorly, and the phrenic nerve laterally. It did not involve the removal of every piece of tissue in the lateral wall of the mediastinal pleura, unless it has been invaded by a thymoma. The cervical extensions of the gland were also removed. The patients were extubated as early as possible in the intensive care unit. Cholinestrase inhibitors were reintroduced postoperatively. All patients were clinically followed up by the same neurologist team. Patients were categorized as follows:

- Remission: no symptoms if the changes were minimal or equivocal. And no medication:
- Improved: on less medication and better control of symptoms, and
- Unchanged: if the changes were minimal or equivocal.

RESULTS

A total of 27 patients, including 09 (33.3%) male patients and 18 (66.7%) female patients, with a mean age of 30.5years (range 15-50 years), were analyzed. The preoperative duration of the disease ranged from 0.5 to 120 months (mean =25.72 +/- 30.68 months) (Table 2).

According to the Myasthenia Gravis Foundation of America (MGFA) clinical classification, 20 (74.07%) patients were in stage II while 7 (25.925%) patients were in stage III

PREOPERATIVE DATA OF PATIENTS

Number of Patients	27
Male	09 (33.33%)
Female	18 (66.66%)
Mean Age	30.5 Years
MGFA CLASS 11	20 (74.07%)
MGFA CLASS 111	7 (25.93%)
Mean Preoperative Duration Of Symptoms	25.72 +/- 30.68 Months

Table 2

HISTOPATHOLOGY OF THYMIC SPECIMENS

Pathologic Findings	No of Patients (n=27)	%Age
Normal	10	37.03
Hyperplasia	12	44.44
Atrophic Thymus	03	11.11
Thymoma	02	7.40

Table 3

(Table 2). The histology of thymus glands consisted of hyperplasia in 12 (44.4%) patients, normal in 10 (37.1%), atrophic thymus in 3 (11.1%) and thymoma in 2 (7.4%) patients (Table 3). More than half of the patients were extubated immediately after surgery, and the majority were extubated within the first twenty-four hour. Hospital mortality was 7.4% (2 of 27). In one case the mortality was due to failure to come off the ventilator in advanced myasthenia while in other case the patient died on fifth post operative day because of respiratory failure due to advanced myasthenia despite putting on ventilator for second time. Morbidity was 3.70% (1 of 27) that is one case of wound dehiscence, which required rewiring later on. The mean follow up period was 31.5 months (3-63 months). Complete remission was achieved in 55.55% (n=15/27) patients, and marked improvement in 25.92% (n=7/27), for a total benefit rate of 80%. Five (18.51%) patients remained unchanged and had no clinical improvement (Table 4).

CLINICAL OUTCOME AFTER THYMECTOMY*

	Frequency (n=27)	%Age
Remission	15	55.55
Improvement	07	25.92
Unchanged	05	18.51

*Mean Follow Up Period=31.5 Months

Table 4

DISCUSSION

Myasthenia gravis is a disorder of neuromuscular junction with a population prevalence of 1: 75000. Younger women and older men tend to be affected at a male female ratio of 1:2.[2] It is a recognized autoimmune disease; thymus gland seems to play a central role in the pathogenesis although the exact has to be elucidated. [12] Weakness results from the reduction in acetylcholine receptors at the neuromuscular junction. [13] Despite significant advances in therapy; myasthenia remains a potentially debilitating and life threatening disease. Currently four methods of treatment are available for patients with myasthenia; *anticholinestrase drugs* to enhance neuromuscular transmission; *immunosuppressant* (prednisolone) to decrease immune response; *plasmapheresis* to remove some of the circulating autoantibodies and *Thymectomy* to remove a major source of antibody production. [14] For this complex auto immune disorder while all or any of the above modes of therapy may be necessary, it is now generally accepted that removal of the thymus gland is distinctly beneficial in the majority of patients with generalized myasthenia gravis. [15]

Thymectomy is well established in the treatment of MG. controversy, however, remains around the indications for and the extent of surgery. Most clinician recommends surgery in the treatment of patients with milder symptoms with no evidence of a thymoma on chest imaging. [16] A variety of surgical approaches to the thymus have been described. Some authors advocate a transcervical approach while most now favors a Transternal approach both for thymomatous and non-thymomatous myasthenia gravis. [17-19] It is associated with minimal morbidity and no mortality and results in long term improvement in the symptoms of patients with MG. In our study all cases had transternal thymectomy. Mortality was 7.4% (n=2/27) in our study mainly because of advanced myasthenia and one morbidity of wound dehiscence. These mortalities could have been reduced by the use plasmapheresis in advanced myasthenia gravis preoperatively, but we haven't got the facilities for plasmapheresis. Our data demonstrate remission and improvement in the vast majority (80%) of patients, after surgery, whatever their preoperative clinical MG status. that remission and clinical improvement in our patients were not predicted by patient's age, sex, duration of disease before surgery, thymic pathology, or antiacetlycholine receptor antibodies titer may expand the indications for surgery. as the absence of thymoma or hyperplasia, furthermore did not influence the remission or the improvement postoperatively, thymic pathology shouldn't influence the indication for surgery. [16]

CONCLUSION

Thymectomy for myasthenia gravis by transternal approach is a safe and effective in relieving the symptoms of the disease. It benefits all groups of patients.

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