Original Article

Effect of Thymectomy on Drug Requirement of Myasthenia Gravis Patients

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Objective: To determine the effect of thymectomy on the drug requirement of myasthenia gravis.
Methods: Forty patients of myasthenia gravis admitted in Neurology Department Mayo Hospital Lahore were registered. After recording their demographic profile and confirmation of their diagnosis of myasthenia gravis, they were subjected to thymectomy. Their dosages of drugs before thymectomy were recorded and were compared with dosage requirements at 18-30 months post thymectomy.
Results: Thymectomy was done in 34 out of 40 patients. Five patients out of total 40 lost follow up and one was referred to oncology. 34 patients remained for follow up, 30 thymectomized and 4 nonthymectomized. The results indicate a marked reduction in average doses of pyridostigmine (90mg vs 270mg; p<0.001), steroids (7.5mg vs 38mg) and azathioprine (100mg vs 118mg) at 18-30 months after thymectomy as compared to before thymectomy. At 18-30 months of follow up, thymectomized patients were using considerably lesser dosages of pyridostigmine (90mg vs 200mg), steroids (7.5mg vs 30mg) and azathioprine (100mg vs 125mg) as compared to non thymectomized patients.
Conclusion: The intra-articular NSAIDs injection is a more effective treatment option compared to intra-articular steroid injection for the management of adhesive capsulitis of the shoulder.
Key words: Thymectomy, myasthenia and gravis.

Introduction

Myasthenia gravis (MG) is an autoimmune disorder of neuromuscular transmission associated with a deficiency of acetylcholine receptors.[1] Medical treatment involves the use of anticholinesterase agents, immunosuppressive drugs, plasmapheresis and gammaglobulin, with reported complete clinical remission rates (CCRRs) of only 15%.[2] Thymectomy has become increasingly accepted as an efficacious procedure for myasthenia gravis, with high rates of complete clinical remission, particularly in patients with nonthymomatous disease.[3,4] A relationship between the thymus and myasthenia gravis was demonstrated in 1901; but it was Blalock et al3 in 1939 who first demonstrated the beneficial effect of thymectomy,[5] since then thymectomy has become an increasingly accepted procedure in the treatment of myasthenia gravis, as it can achieve complete clinical remission rates as high as 80% in accordance with most of the reports published in the literature[6-8] However controversy still persists regarding appropriate selection of patients, the optimal surgical approach, and the extent of mediastinal dissection required.[9,10]

The purpose of our study was to assess the effects of thymectomy on the course of myasthenia gravis in our part of the world and the decrease in the dosages of various medications used for myasthenia gravis.

Methods

This is a descriptive cross sectional study which was conducted on patients of myasthenia gravis in the Department of Neurology, Mayo Hospital Lahore after permission from ethical review committee. Forty patients were registered for this purpose who got admitted in Neurology Department Mayo Hospital Lahore, and their biodata was recorded. Their clinical evaluation was done to assess the severity of disease. Confirmation of the diagnosis was done by prostigmine test, and repetitive nerve stimulationtest performed at the electrophysiology section of Neurology Department, Mayo Hospital Lahore. Additional investigations done in all were thyroid function tests and computed tomography of thorax with contrast. Anti acetylcholine receptor antibodies could be done in only eight patients due to affordability issues. Drug treatment before thymectomy of all patients was recorded with dosages of the medications used. Thymectomy was performed in 34 patients after careful assessment by Thoracic Surgical Department, Mayo Hospital Lahore. For patients who remained in follow up, drug treatment at 18-30 months post-thymectomy was recorded.

Results

Sex Distribution: Out of the 40 patients registered, male were 19 and female 21.

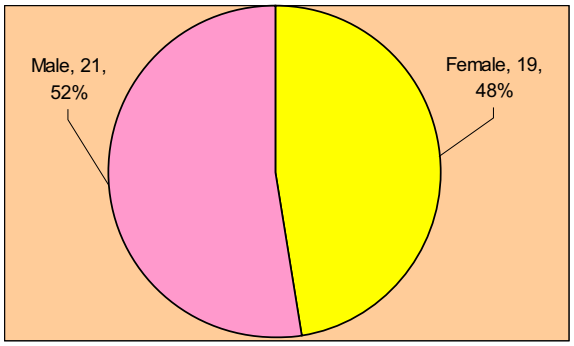

Fig-1: Sex distribution.

Investigations: Thyroid function tests were abnormal in only one patient, whereas CT thorax was abnormal in 4 male and 4 female patients.

	Thyroid function tests	CT Scan thorax	Anti acetylcholine receptor antibodies
Male	n=18 (94%)	n=18 (94%)	3
	a=1 (6%)	a=4 (21.05%)	
Female	n=21 (100%)	n=17 (80.9%)	5
	a=0 (0%)	a=4(19.4%)	

Follow Up Status

Total number of patients registered were 40, out of which thymectomy was not performed in 6 patients and 5 patients left follow up. One patient was referred to oncology. Finally, 34 patients remained for follow up, 30 thymectomized and 4 non-thymectomized.

Histological findings in operated thymus (34)

Histological findings revealed thymic hyperplasia in 85.3% and thymoma in 8.8%.

	Hyperplasia	Thymoma	Normal
Male	12	3	2
Female	17	0	0
Total	29 (85.3%)	3 (8.8%)	2 (5.9%)

Duration of first symptom till thymectomy

Minimum duration	Three months
Maximum duration	Fifty two months
Average duration	Thirteen months
Mean duration	Twelve months

Dosages of drugs before thymectomy in forty patients

Drug	Minimum Dose	Maximum Dose	Average Dose
Pyridostigmine (40)	120mg	720mg	270mg
Steroids (36)	15mg	60mg	38mg
Azathioprine (8)	100mg	150mg	118mg

Dosage of drugs after 18-30 months of thymecto- my in thirty patients

Drug	Minimum Dose	Maximum Dose	Average Dose
Pyridostigmine	30mg	240mg	90mg
Steroids	0mg	30mg	7.5mg
Azathioprine	0mg	150mg	100mg

Six patients required no medical treatment after 20-27 months.

More than half of patients were on less than 90mg of pyridostigmine/day.

Six patients were without steroids.

2 patients required only 2.5mg of steroids/day.

10 patients required only 5mg of steroids/day.

No significant reduction in dose of azathioprine except one on 50mg/day and one was free of it.

Dosage of drugs in non-thymectomized patients after 18-30 months of treatment in four patients

Drug	Minimum Dose	Maximum Dose	Average Dose
Pyridostigmine	120mg	240mg	200mg
Steroids	10mg	40mg	30mg
Azathioprine	100mg	150mg	125mg

Comparison of dose requirement before and after thymectomy

In thymectomized patients, there was marked reduction in average doses of pyridostigmine (90mg vs 270mg; $p < 0.001$), steroids (7.5mg vs 38mg) and azathioprine (100mg vs 118mg) at 18-30 months after thymectomy as compared to before thymectomy.

Drug	Before thymectomy	After thymectomy
Pyridostigmine	270mg	90mg
Steroids	38mg	7.5mg
Azathioprine	118mg	100mg

Comparison of dose requirement in non-thymectomized patients at start and after 2 years of treatment

Drug	Before thymectomy	After thymectomy
Pyridostigmine	240mg	200mg
Steroids	27.5mg	30mg
Azathioprine	150mg	125mg

Comparison of dose requirement after 18-30 months in thymectomized and non-thymectomized

At 18-30 months of follow up, thymectomized patients were using considerably lesser dosages of pyridostigmine (90mg vs 200mg), steroids (7.5mg vs 30mg) and azathioprine (100mg vs 125mg) as compared to non thymectomized patients.

Drug	Before thymectomy	After thymectomy
Pyridostigmine	90mg	200mg
Steroids	7.5mg	30mg
Azathioprine	100mg	125mg

Discussion

Our study reveals a significant reduction in dose requirement and even full drug freedom within 18-30 months in patients of myasthenia gravis who underwent thymectomy. Out of all, 6 (20%) patients became free of any medications at 20-27 months.This study was one of its unique nature to be conducted in our part of the world and it conclusively proves the positive role of thymectomy in myasthenia gravis in our population as well, where many treating doctors were apprehensive that surgical facilities may not be up to the mark in our region so should treating doctors opt for thymectomy in myasthenia gravis or should they stick to its medical management alone. Our results correlate well with other studies[11] across the world that prove the positive role of thymectomy in treating patients of myasthenia gravis.

Conclusion

A significant reduction in requirement of doses of different drugs noticed in thymectomized patients at 18-30 months post thymectomy. Thymectomy should be considered as an effective and at times curative treatment option for patients of myasthenia gravis.

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