

Does thymectomy have a role in treatment of pure ocular AChR-Ab+ non-thymomatous Myasthenia Gravis patients? A retrospective case-control study

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BACKGROUND

The management of ocular myasthenia gravis (OMG) with anti-acetylcholine receptor antibody (anti-AChR Ab) positivity remains controversial, particularly regarding the role of thymectomy. Current evidence is limited by heterogeneous cohorts and inconsistency in thymic histology across studies.

RESULTS

At baseline, the conservative group had an older age at onset and more cardiovascular comorbidities, while the thymectomy group showed higher MG-ADL and higher steroid dosage at baseline. Thymectomy resulted in a greater improvement in MG-ADL scores after 3 years from baseline, a lower annual relapse rate and an important reduction in steroid dosage with a median of Δ steroid dosage at last follow up of -25 mg (IQR 20.3).

At the last follow up, complete stable remission (CSR) was achieved in 28% vs 5.6% ($p < 0.05$). Among the surgical group, patients who achieved PR and CSR had a shorter time to surgery from disease onset compared with those who did not (median 24 vs 60 months); moreover, ARR decrease significantly after thymectomy compared to ARR before thymectomy with a median of 0.5 and 0.3 ($p = 0.001$).

METHODS

This retrospective, single center, case-control study conducted at MG Clinic of Pisa University Hospital between 2004 to 2025, included OMG patients, class I MGFA [1], with anti-AChR Ab positivity (via RIA, fixed-CBA or live-CBA methods), no prior history of disease generalization pre-surgery and histological or radiological exclusion of thymoma. Evaluated outcomes were clinical improvement following thymectomy according to MGFA-PIS, steroid-sparing effect, annual relapse rate (ARR).

DISCUSSION

This study supports a potential benefit of thymectomy in non-thymomatous AChR-positive OMG, with higher rates of CSR and reduced relapse frequency, particularly when surgery is performed early during the disease course (e.g. within two years from onset). Previous studies have reported variable results, often limited by small sample sizes, heterogeneous patient populations and inclusion of seronegative or thymomatous cases [2]. Ambrogio et al. [3] specifically investigated surgical outcome in anti-AChR Ab ocular MG patients, showing that thymectomy led to more rapid remission than nonsurgical treatment of class I MG. The main limitations of this study are the small sample size and the retrospective design. Nevertheless, our findings suggest that OMG patients with refractory disease and/or comorbidities which contraindicate high doses of steroid could benefit from early thymectomy. Larger, prospective studies are needed to further optimize OMG treatment.

	Thymectomy group n= 32	Conservative group n= 36	P value*
Sex n (%)			
Female	53%	28%	0.033
Male	47%	72%	
Age at onset median (IQR) years	41 (22.7)	63.5 (17.3)	< 0.05
MG-ADL at baseline median (IQR)	3 (3)	2 (1)	0.034
Time from onset to thymectomy (IQR) months	41 (38.5)	--	
Thymic histology			
Hyperplasia	27 (84%)		
Atrophy/involution	4 (13%)	--	
Cyst	1 (3%)		
Comorbidities n (%)			
Cardiovascular disease	5 (15%)	15 (42%)	0.019
Basedow disease	2 (6%)	4 (11%)	0.481
Other autoimmune disease	7 (22%)	4 (11%)	0.229
Other	17 (53%)	26 (72%)	0.103

Table 1: Comparison of baseline characteristics of thymectomy and conservative OMG cohorts

	Thymectomy group n= 32	Conservative group n= 36	P value*
MGFA-PIS last follow-up n (%)			
CSR	9 (28.1%)	2 (5.6%)	< 0.05
PR	7 (21.9%)	9 (25%)	ns
MM	12 (37.5%)	21 (58.3%)	ns
U	0	4 (11.1%)	Ns
E	1 (3.1%)	0	ns
Remission (CSR+PR)	16 (50%)	11 (30%)	0.138
Time to surgery (IQR) months	41 (38.5)	--	--
Δ MG-ADL last follow up	-1.91	-1.09	0.095
Δ MG-ADL 3 years from baseline	-2.2	-0.46	< 0.001
ARR median (IQR)	0 (0.38)	0.4 (0.4)	0.003

Table 2: Comparison of neurological outcomes

Bibliography:

- [1] Myasthenia gravis: recommendations for clinical research standards. Task Force of the Medical Scientific Advisory Board of the Myasthenia Gravis Foundation of America. Neurology. 2000;55(1):16-23.
- [2] Liu Z, Feng H, Yeung SC, Zheng Z, Liu W, Ma J, Zhong FT, Luo H, Cheng C. Extended transsternal thymectomy for the treatment of ocular myasthenia gravis. Ann Thorac Surg. 2011 Dec;92(6):1993-9.
- [3] Mineo TC, Ambrogio V. Outcomes after thymectomy in class I myasthenia gravis. J Thorac Cardiovasc Surg. 2013 May;146(5):1319-24. doi: 10.1056/j.jtcvs.2012.12.005. Epub 2013 Jan 11. PMID: 23312978.

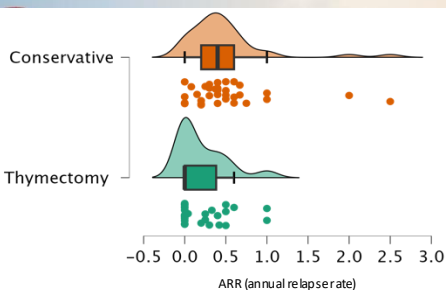


Figure 1: Raindrop plots of annual relapse rate (ARR)

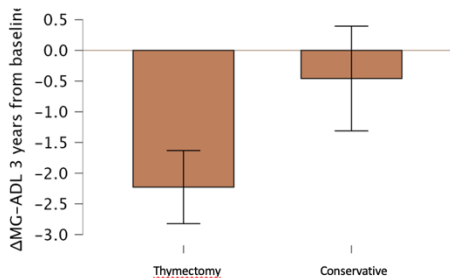


Figure 2: Boxplots of Δ MG-ADL at 3 years of follow up

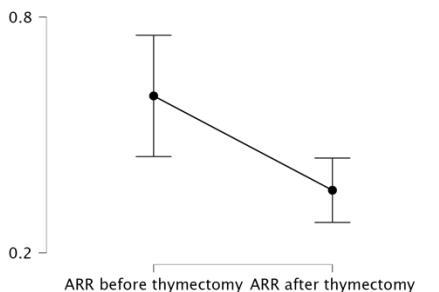


Figure 3: Comparison of ARR before and after thymectomy in surgical group