Clinics in Surgery

Research Article
Published: 03 Mar, 2017

Improvements in the Quality of Life of Patients with Myasthenia Gravis with Thymoma Who Underwent Video Thoracoscopic Thymectomy

Miguel Congregado, Nathalie Pinos, Sergio Moreno-Merino and Rafael Jimenez-Merchan*

Department of General Thoracic Surgery, Virgen Macarena University Hospital, Spain

Abstract

Introduction: Thymectomy as part of Myasthenia Gravis treatment has been proved to produce total o partial clinical remissions. But almost always, parameters to measure this outcome have been quantitative, as the amount of medication, presence or absence of symptoms. Very important factors of the psychosocial field as real determinants of quality of life after surgery in this kind of patients have been less investigated. We present a qualitative study of outcome after thymectomy in non-thymomatous Myasthenia Gravis.

Methods: We performed a retrospective qualitative study to know the improvement in the quality of life after thymectomy in non-thymomatous Myasthenia Gravis patients. Seventeen patients met the inclusion criteria from January 2003 to December 2013 (extended thymectomy, Myasthenia Gravis confirmed, non-thymomatous, over 18 years old). We applied the SF-36 Questionnaire and the collected data were tabulated and analysed with SPSS 22.0. The Wilcoxon test for non-parametric data was used to compare quality of life changes after surgery.

Results: Quantitative surgical outcome of these patients was: 52.9% had significant clinical improvement with Oosterhuis scale (total remission n=5, mild symptoms n=3, mild disability n=1). 17.6% had Complete Stable Remission without medication, 35.2% had pharmacological remission with low doses. All areas of SF-36 Questionnaire improved their median value after thymectomy, with $p< 0.05$.

Conclusion: It seems that there is an improvement of quality of life in patients suffering Myasthenia Gravis after extended thymectomy. There are better median results of all fields of the SF-36 Questionnaire after surgery, statistically significant.

Keywords: Myasthenia Gravis; Thymectomy; Quality of life

OPEN ACCESS

Correspondence:
Miguel Congregado, Department of General Thoracic Surgery, Virgen Macarena University Hospital, Av. Dr. Fedriani, 3, 41009 Seville, Spain, Tel: 34 955008206; Fax: 34 955008205; E-mail: mcongregado@us.es

Received Date: *16 Sep 2016*
Accepted Date: *25 Feb 2017*
Published Date: *03 Mar 2017*

Citation:
Congregado M, Pinos N, Moreno-Merino S, Jimenez-Merchan R. Improvements in the Quality of Life of Patients with Myasthenia Gravis with Thymoma Who Underwent Video Thoracoscopic Thymectomy. Clin Surg. 2017; 2: 1318.

Introduction

Myasthenia Gravis (MG) has been connected to alterations in the thymic gland since Oppenheim published the results of the autopsy of a myasthenic patient in which he found a thymic tumour. Since then, this connection has been getting recognition, and today thymetoctomy is indicated for young myasthenic patients that do not respond to medical treatment, above all in the first years after the diagnosis. The goal is to completely remove the thymus, along with the fat that surrounds it, through median sternotomy, thoracotomy, cervicotomy or video thoracoscopy. In many cases, the surgery stabilizes the disease, reduces, the medication and appearance of myasthenic crises, but this benefit does not show itself immediately right after surgery but progressively after months or years [1-7].

Several studies have been published trying to clarify the benefits this technique has provided, describing remissions that go from being partial to total, but they only took into account quantitative parameters such as medication, or the presence or absence of symptoms, ignoring a very important factor such the amount of obvious benefits the patient experiences at a psychosocial level, and these are the true determinants of the changes in the quality of life after surgery. The goal of this study is to get to know these changes in the quality of life of MG patients after thymectomy without thymoma.

Material and Methods

A descriptive retrospective qualitative research study was carried out to determine the

Table 1: Osserman and Genkins Scales for MG [1].

Group	Affectation	Characteristics
1	Ocular (from 15% to 20%).	• Limited to eye muscles • 40% develop a widespread disease • Electromyography can work positively in the surrounding muscles
2A	Moderately widespread disease (30%).	• Affectation of head muscles, limbs and trunk • Breathing muscles are preserved • Good response to anticholinesterase drugs • Low mortality
2B	Severe moderately widespread disease (20%).	• Significative diplopia and ptosis • Bulbar muscles are compromised: dysarthria, disphagia y difficulties to swallow. • Limb weakness • Intolerance towards exercise
3	Fulminant acute disease (11%).	• Sudden onset • The severe symptoms appear after 6 months • Early compromise of breathing muscles • Severe weakness of the limbs and trunk • Weak response to anticholinesterase. • Frequent crises. • High mortality. • Relatively permanent Thymoma
4	Severe late disease (9%).	• Slow progress of the disease after two years • High frequency of Thymoma. • Relavitely bad Prognosis

improvement in the quality of life of MG patients without thymoma who had undergone video thoracoscopic thymectomy from 2003 to 2013, prior consent of the ethical committee of Virgen Macarena University Hospital, in Seville.

MG patients who were overage and had undergone an extended Thymectomy were included and those with thymic tumors (Thymoma or Thymus carcinoma …) and the ones who were diseased at the moment of the study were excluded.

A research process took place across hospital records, concerning the following variables: age, sex, Osserman group, pre and post-surgery medication, definitive pathological anatomy, time that had passed from diagnosis to surgery, Oosterhuis scale, Millichap scale and post surgery MG Foundation of America scale. In order to determine the changes in the quality of life, the SF-36 Questionnaire was implemented, through a telephone survey, prior informed consent of the patients. The two questionnaires (a pre-surgery SF-36, where they were asked about their former situation, and a post-surgery SF-36, where they were asked about their current situation) were filled out at the same time (always in a period at least 12 months after surgery), relying on the patients to remember what their situation was before the surgery. This was the main limitation of our study (recall bias).

Statistical analyses

The data were tabulated and analyzed with the SPSS 22.0 program and we resorted to the Wilcoxon test for the non parametric data to compare the changes in the quality of life after surgery.

Mg Classification Scale

To determine the clinical affectation of our patients, we used the Osserman and Genkins scales.

Clinical scales to assess the success of surgery

To assess the response to surgery treatment, there are several scales, being the Oosterhuis one among the most important (0: total remission, 1: mild signs and symptoms, 2: mild disability, 3: moderate disability, 4: severe disability and 5: the patient requires respiratory support), the Millichap/Dodge scale (A: total remission without medication, B: good response, with low medication dosage, C: mediocre response with high dosage, D: without changes or worsening and E: death) and the MG Foundation of America scale (RCE Complete Stable Remission: Absence of symptoms for at least a year, RF pharmacological remission: Absence of symptoms for at least a year through the use of any kind of pharmacological therapy, and Mild Manifestations: the patient doesn't show MG symptoms but feels weakness in some muscles) [8-9].

Sf-36 scale of quality of life

The International Quality of Life Assessment (IQOLA) health questionnaire was created in the nineties in the United States and was translated into Spanish with the name SF-36. It consists of 36 questions (or items) that assess 8 levels of the state of health: Physical function, Physical role, Body aches, Overall health, Vitality, Social function, Emotional role and mental health. It is conceived for people ≥14 years old and can be done on your own or in the through an interview (face-to-face or by telephone). For its assessment, the results are converted into a scale that goes from 0 (the worst state of health) to 100 (the best state of health) [10-15].

Results

The group of study consisted of a total of 17 patients, 13 females and 4 males, with an average age of 39±11.5 years. The surgery was performed through thoracoscopy in every case, without showing post-surgery complications. The pathological anatomy was that of follicular hyperplasia in 10 patients (58.8%), thymolipoma in 4 (23.5%), atrophy in 2 (11.8%) and normal in 1 (5.9%). The medication prior to the intervention was: anticholinergic drugs in 14 cases, corticosteroids in 13, plasmapheresis in 1 and immunoglobulins in 1. In every case, more than a year had passed from the MG diagnosis to the surgery. In the years that passed between surgery and the moment to fill out the questionnaire, we see that there is heterogeneity, with an interval from 0 to 11 years. We found 7 patients (41.2%) who were under 5 years old and 10 (58.8%) that had undergone the surgery more than 5 before.

The results after thymectomy in the different scales are shown in Table 1, where a change in the distribution per Osserman group can be seen, from an initial value of 5 patients in stage 2B and 12 in 2B to a value of 5 patients without disease, 6 in stage 2A and 6 in stage 2B. Therefore, there is a 29.4% (5 patients) with total remission, an improvement of 50% in group 2B and 60% in group 2A, which gives us a total of 52.9% (9 patients) with clinical improvement. In the

Table 2: Levels of the SF-36 Questionnaire.

Level	Meaning
Physical function	Level in which the lack of health restricts daily physical activities, such as personal care, walking, going up the stairs, taking or transporting cargo, and making moderate or intense efforts.
Physical role	Level in which the lack of health is detrimental to the professional life and to carry out other daily activities, making for a performance lower than we wish for, or restricting the kind of activities that can be performed or their intensity.
Body aches	Level that measures the intensity of the pain we experience and its effect on our daily work and house chores.
Overall health	Personal assessment of the state of health that includes the current situation and future prospects, and the resistance values to get sick.
Vitality	Feeling energy and vitality, instead of tired and depressed.
Social function	Level in which the physical and emotional problems that originate from the lack of health are detrimental to our daily social life.
Emotional role	Level in which emotional problems affect the professional life and other daily activities, considering the reduction of the time dedicated to them, the performance decrease and the effort at work.
Mental health	Assessment of the overall mental health, considering depression, anxiety, self-control and general well-being.

Ossterhuisse scale we can observe that in 5 cases there was a complete remission, in 3 mild symptoms and in 1 a mild disability, which makes for a total of 9 patients with significative clinical improvement and this matches with the data obtained with the Osserman group. Concerning the need for post-surgery medication, there was a stable complete remission (SCR) without medication in 3 patients and good response with low dosages in 6 (pharmacological remission), providing a total of 9 patients with positive response.

Pre and post-Surgery Values are expressed through average.

Statistical Significance in $p< 0.05$ values.

The changes in the quality of life are provided in Table 2, where we can see an improvement on the average of all the other levels of the SF-36 works with. In the physical function we can see an improvement on the average that goes from 25 to 90, in the physical and emotional role the average goes from 0 to 100, in the body aches from 32.5 to 55, in overall health from 30 to 65, in vitality from 25 to 50, in social function from 25 to 53, and in mental health from 44 to 68. To finish explaining the comparison between the quality of life before and after surgery, $p< 0.05$ values were obtained in all levels, which makes these changes statistically important.

Discussion

Myasthenia Gravis is a pathology that affects young people (20-30 years old), and that causes a gradual decrease of the quality of life in this population group with a decrease of the functions in physical, social, working and emotional levels. After checking the bibliography, we found out that there was a lack of studies similar to this. Most of the literature we found determines that there was a good or bad response after the thymectomy, relying only on the need for post surgery medication and the presence of clinical Myasthenia [16].

Studies in which the quality of life of MG patients was measure are: the works of Brush et al. [17] and Bachmann et al. [18] both carried out in Hamburg at different times. The first one performed in 1996 and its objective was to compare the quality of life of MG patients that had undergone thymectomy and that got a positive response to the surgery according to the Osserman scale in contrast with the ones that did not get a response or changes after surgery. A significative improvement was observed in the first group and in the second, which was carried out in 2008, they compared the quality of life of MG patients that had undergone thymectomy by video thoracoscopy in contrast to the ones who were submitted to open surgery, without observing major differences between the two groups. None of the studies make a distinction of the cases with thymoma, the ones without it, and the approach they took for the surgery.

These are the key areas of our study, given that there is a clear evidence of thymectomy in patients with thymic tumor, being MG patients or not, creating a doubt when there is no evidence of such tumors. This is it because, nowadays, standardized management protocols do not exist, given that we do not know with certainty how beneficial surgery could be for this disease. Furthermore, open surgery could determine a higher decrease in the quality of life in comparison to video thoracoscopic surgery. So, despite the fact that these studies provide a higher number of patients and assess the quality of life just like we do, they are not investigating the same population, given that their group is heterogeneous when it comes to surgical intervention, surgical approach and ways to determine the improvement in the quality of life.

As we can observe, the remission figures are changeable, this can be caused by several factors such as the average of the age of the patients [3-19] (in our study 39±11.5 years), the time that passed from diagnosis to surgery (the less time, the better results we obtain [3-20]; in our study more than a year had passed since the diagnosis was made, for all the patients) and the time between surgery and post-operative assessment, because it has become evident that the studies that provide mostly patients that had been submitted to a follow-up of more than 5 years, get a better response [3-16-21]. Despite that, the existent studies agree that there is a clinical and pharmacological improvement post thymectomy, regardless of the surgical approach that is carried out, with little changes regarding the incidence of response that can be higher or lower depending on the series of cases that had been assessed. And this leads us to think that thymectomy is a useful therapeutic technique and must be considered as a part of the therapeutic arsenal in MG patients [3,22,23].

As we can check, the studies are based on clinical and pharmacological scales to decide if a patient has shown and better or worse response, ignoring the patients' perception of their own state of health and disease. This is what our study is based on, and we experienced an improvement in all the levels of the SF-36 Questionnaire. The levels that experienced a higher improvement were the physical and emotional role, that increased their average from 0 to 100 points, which implies going from being in their worst state of health to their best, taking into account that the physical role is one of the most affected levels in MG patients, and this change is a highlight of our work. The physical function was another aspect that showed a significant increase of its average from 25 to 90, and this is precisely one of the main factors that restrict the performance of MG patients. Through these results we can see that, despite not showing an improvement in all the cases following the clinical scales, this result has changed the quality of life of the patients and has helped

them improve it exponentially.

Apart from the aforementioned aspects that were the ones who showed the most remarkable changes, we cannot forget the changes on the average of body aches, that went from 32.5 to 55, overall health from 30 to 65, vitality from 25 to 50, social function from 25 to 53, and mental health from 44 to 68. A statistical significance was found in all of the changes detected in the different levels of the SF-36 Questionnaire.

To conclude, focusing on the results of our study, it would be advisable to elaborate a study with a higher number of samples in order to firmly affirm that thymectomy provides an important change in the quality of life of MG patients. This is why our work must be considered the onset for a larger project that would be able to involve the overall population.

Therefore, out of the results of this work, we can conclude that:

-Thymectomy, as a treatment for the MG, provides a clinical improvement with a complete or partial decrease of medication.

-According to the SF-36 Questionnaire, MG patients show a low quality of life

-An improvement in the quality of life of MG patients is seen after thymectomy is applied, with an increase of the average in all aspects: physical function, physical role, emotional role, body aches, overall health, vitality, social function and mental health, with a $p< 0.05$ value.

References

1. Shields T, LoCicero J, Ponn R, Rusch V, General Thoracic Surgery, 6th ed. Lippincott Williams & Wilkins: 2005; 2617-2637.
2. Durelli L, Maggi G, Casadio C, Ferri R, Rendine S, Bergamini L. Actuarial analysis of the ocurrence of remissions following thymectomy for myasthenia gravis in 400 patients. J Neurol Neurosurg Phychiatry. 1991; 54: 406-411.
3. Maggi G, Casadio C, Cavallo A, Cianci R, Molinatti M, Ruffini E. Thymectomy in myasthenia gravis: results of 662 cases operated upon in 15 years. Eur J Cardiothorac Surg. 1989; 3: 504-511.
4. DeFilippi VJ, Richman DP, Ferguson MK. Transcervical thymectomy for myasthenia gravis. Ann Thorac Surg. 1994; 57: 194-197.
5. Vázquez-Pelillo J, Gil Alonso J, Díaz-Agero P, García Sánchez-Girón J, Roca Serrano R, Díez Tejedor E, et al. Prognostic factors and outcome of thymectomy in 80 cases of myasthenia gravis. Arch Bronconeumol. 2001; 37: 166-171.
6. Loscertales J, Ayarra J, Congregado M, Arroyo A, Jiménez R, Girón J, et al. Video-assisted thoracoscopic thymectomy for the treatment of myasthenia gravis. Arch Bronconeumol. 2004; 40: 409-413.
7. Loscertales J, Jiménez M, Arenas C, García D, Girón J, Congregado M. Tratamiento de la miastenia gravis mediante timectomíatoracoscópica. técnica y resultados iniciales. Arch Bronconeumol. 1999; 35: 9-14.
8. Papatestas AE, Genkins G, Kornfeld P, Eisenkraft JB, FagerstromRP, Pozner J, et al. Effects of thymectomy in myasthenia gravis. Ann Surg. 1987; 206: 79-88.
9. Oosterhuis HJ. The natural course of Myasthenia gravis: a long-term follow-up study. J NeuroNeurosurg Psychiatry. 1989; 52: 1121-1127.
10. Ware JE Jr, Sherbourne CD. The MOS 36-item short-form health survey (SF-36) (I). Conceptual framework and item selection. Med Care. 1992; 30: 473-483.
11. Ware JE. SF-36 health survey update. Spine. 2000; 25: 3130-3139.
12. Garratt A, Schmidt L, Mackintosh A, Fitzpatrick R. Quality of life measurement: bibliographic study of patient assessed health outcome measures. BMJ. 2002; 324: 1417.
13. Alonso J, Prieto L, Anto JM. SF-36 Health Survey (the SF-36 health questionnaire): an instrument for measuring clinical results. Med Clin (Barc). 1995; 104: 771-776.
14. Vilagut G, Ferrer M, Rajmil L, Rebollo P, Permanyer-Miralda G, Quintana JM, et al. The Spanish version of the Short Form 36 Health Survey: a decade of experience and new developments. Gaceta sanitaria. 2005; 19: 135-150.
15. Ware JE Jr, Snow KK, Kosinski M, Gandek B. SF-36 Health Survey: manual and interpretation guide. Boston: New England Medical Center. 1993.
16. Wolfe GI, Kaminski HJ, Aban IB, Minisman G, Kuo HC, Marx A, et al. Randomized Trial of Thymectomy in Myasthenia Gravis. N Engl J Med. 2016; 375: 511-522.
17. Busch C, Machens A, Pichlmeier U, Emskotter T, Izbicki Jr. Long-term outcome and quality of life after thymectomy for myasthenia gravis. Ann Surg. 1996; 224: 225-232.
18. Bachmann K, Burkhardt D, Schreiter I, Kaifi J, Busch C, Thayssen G, et al. Long-term outcome and quality of life after open and thoracoscopicthymecyomy for myasthenia gravis: analysis of 131 patients. Surg Endoscop. 2008; 22: 2470-2477.
19. Diaz A, Black E, Dunning J. Is thymectomy in non-thymomatous myasthenia gravis of any benefit? Interact Cardiovasc Thorac Surg. 2014; 18: 381-389.
20. Manlulu A, Lee TW, Wan I, Law CY, Chang C, Garzon JC, et al. Video-assisted thoracic surgery thymectomy for nonthymomatous myasthenia gravis. Chest. 2005; 128: 3454-3460.
21. Freeman RK, Ascioti AJ, Van Woerkom JM, Vyverberg A, Robison RJ. Long-term follow-up after robotic thymectomy for non thymomatous myasthenia gravis. Ann Thorac Surg. 2011; 92: 1018-1022.
22. Masaoka A, Yamakawa Y, Niwa H, Fukai I, Kondo S, KobayashiM, et al. Extended thymectomy for myasthenia gravis patients: a20-years review. Ann Thorac Surg. 1996; 62: 853-859.
23. Park IK, Choi SS, Lee JG, Kim DJ, Chung KY. Complete stable remission after extended transsternalthymectomy in myasthenia gravis. Eur J Cardiothorac Surg. 2006; 30: 525-528.
24. Keijzers M, De Baets M, Hochstenbag M, Abdul-Hamid M, ZurHausen A, Van Der Linden M, et al. Robotic thymectomy in patients with myasthenia gravis: neurological and surgical outcomes. Eur J Cardiothorac Surg. 2015; 48: 40-45.
25. Cakar F, Werner P, Augustin F, Schmid T, Wolf-Magele A, Sieb M, et al. A comparison of outcomes after robotic open extended thymectomy for myasthenia gravis. Eur J Cardiothorac Surg. 2007; 31: 501-504.
26. Meacci E, Cesario A, Margaritora S, Porziella V, Tessitore A, Cusumano G, et al. Thymectomy in myasthenia gravis via original video-assisted infra-mammary cosmetic incision and median sternotomy: long-term results in 180 patients. Eur J Cardiothorac Surg. 2009; 35: 1063-1069.