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THE INFLUENCE OF THYMECTOMY ON ACHIEVING PHARMACOLOGICAL REMISSION IN PATIENTS WITH GENERALIZED MYASTHENIA GRAVIS

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Introduction. Myasthenia gravis (MG) is a chronic autoimmune disease of neuromuscular transmission, characterized by pathological muscle fatigability and weakness of skeletal muscles. The generalized form of the disease often requires long-term immunosuppressive therapy, which is associated with the risk of side effects and reduced quality of life for patients. The thymus plays a key role in the pathogenesis of MG, as it is a source of autoimmune activation with the production of antibodies to acetylcholine receptors. Thymectomy has long been used as a treatment method for generalized myasthenia gravis, but its effectiveness remained a subject of debate until the emergence of high-quality randomized clinical trials. Modern evidence-based medicine data indicate the potential impact of thymectomy on the course of the disease, reducing the need for immunosuppressive therapy and achieving pharmacological remission, which determines the relevance of this topic.

Aim. The aim of this study is to analyze modern evidence-based data on the influence of thymectomy on achieving pharmacological remission in patients with generalized Myasthenia gravis based on the results of randomized clinical trials, in particular the multicenter thymectomy trial in Myasthenia Gravis patients (MGTX trial), and current international and national clinical guidelines.

Materials and methods. For the preparation of this work, a systematic review of modern scientific publications, clinical guidelines, and official reports of international

and national organizations was conducted, in particular the American Academy of Neurology (AAN), the European Academy of Neurology (EAN), the Myasthenia Gravis Foundation of America (MGFA Consensus Guidance) and the State Expert Center of the Ministry of Health of Ukraine (SEC). Furthermore, articles published in international medical journals (PubMed, Neurology, JAMA Neurology, Lancet Neurology) from 2016-2025 were analyzed, including data from the MGTX trial and its subsequent follow-up. Special attention was paid to materials concerning:

- the effectiveness of thymectomy in patients with generalized Myasthenia gravis;
- the influence of surgical intervention on achieving pharmacological remission and reducing the need for corticosteroids;
- comparison of the results of open and minimally invasive (VATS, robot-assisted) thymectomy techniques;
- the frequency of postoperative complications and long-term symptom control.

The data were summarized and analyzed to:

- assess the impact of thymectomy on the rate of achieving pharmacological remission;
- compare the effectiveness of different surgical approaches;
- formulate practical recommendations regarding indications for thymectomy and the management of patients with generalized myasthenia gravis.

Results. The analysis of modern scientific publications, randomized controlled trials, and clinical guidelines, including data from the MGTX trial and its long-term follow-up, allows for the identification of changes in the clinical course of generalized Myasthenia gravis after thymectomy [1,2]. In patients who underwent thymectomy in combination with standard medical therapy (corticosteroids and other immunosuppressants), a higher frequency of achieving pharmacological remission was observed compared to the medical treatment-only group [1,2,4]. The average dose of corticosteroids in these patients was typically lower, indicating the potential steroid-sparing effect of the intervention [4,5].

Comparison of open and minimally invasive thymectomy techniques (VATS, robot-assisted surgeries) shows similar clinical results regarding pharmacological remission [6,7]. At the same time, in the minimally invasive intervention groups, a lower frequency of postoperative complications, shorter duration of hospitalization, and faster patient recovery were observed, which may have practical significance when planning surgical intervention [6,7].

Retrospective cohorts of patients with late-onset generalized MG (≥ 50 years) demonstrate a moderate increase in the likelihood of pharmacological remission and a reduced need for high doses of corticosteroids after thymectomy, although the variability in results underscores the importance of an individual approach to selecting patients for surgery [7]. The analysis of acetylcholine receptor antibodies in patients also indicates the possible influence of the immunological profile on the effectiveness of thymectomy [4,5].

Table 1. The influence of thymectomy on the outcomes of generalized mg treatment (summary of rct and cohort study data, normalized values)

Category	Thymectomy + Therapy	Medical Therapy Only
Rate of Med. Remission (3 years)	70	40
Average Corticosteroid Dose (mg)	15	30
Rate of Postop. Complications (%)	8	2
Quality of Life Score (0-100)	85	65

A systematic review of modern clinical guidelines from AAN, EAN, and MGFA reveals a trend towards reduced medication burden and improved symptom control in patients who have undergone thymectomy [4,5,9]. It was found that the time from disease onset to surgery and the presence of comorbidities can influence the speed and degree of achieving remission [4,5].

Furthermore, recent studies from 2016-2025 highlight quality of life indicators: patients after thymectomy report improvements in physical activity, reduced muscle fatigue, and increased ability for self-care, which correlates with reduced medication burden and symptom stabilization [8,10].

Conclusion. The conducted systematic review of modern scientific publications and clinical guidelines allows us to observe that thymectomy in combination with standard medical therapy influences the course of generalized Myasthenia gravis. The data indicate a trend towards an increased rate of pharmacological remission, reduced need for corticosteroids and other immunosuppressants, as well as improved quality of life indicators in patients after surgery.

Table 2. Sources of Evidence Base and Key Conclusions (2016-2025) (Systematization of analyzed scientific publications)

Source (Year)	Study Type	Main Conclusion Regarding Thymectomy
Wolfe GI et al. (2016)	RCT (MGTX Trial)	Fundamental confirmation of the advantage of surgery over medication alone.
Wolfe GI et al. (2019)	Long-term follow-up	Confirmation of the sustainability of the remission effect over 5 years of observation.
AAN / EAN / MGFA (2020-21)	Clinical Guidelines	Official inclusion of thymectomy in treatment protocols for AChR+ patients.
MDPI / J Clin Med (2022)	Narrative Review	Analysis of modern immunosuppression regimens in combination with surgery.
Eur J Neurol (2025)	Retrospective Analysis	Evidence of the effectiveness of robot-assisted surgeries (20-year experience).
J Neurol (2025)	Cohort Study	Effectiveness of the method in patients with late-onset MG (≥ 50 years).
Shevchenko & Kalbus (2025)	Review (Ukraine)	Adaptation of modern views on the diagnosis and management of myasthenia.

The effectiveness of thymectomy is observed in both open surgeries and minimally invasive interventions, with the latter associated with a lower risk of postoperative complications and a shortened hospital stay. Retrospective studies demonstrate that even patients with late-onset generalized MG can derive clinical

benefit in the form of an increased likelihood of remission and reduced medication burden, although results vary depending on individual patient characteristics.

Analysis of data regarding patients' immunological profiles, including the presence of antibodies to acetylcholine receptors, indicates a possible influence of the type of immune response on the effectiveness of thymectomy. Additionally, timely surgical intervention and early inclusion of the patient in a treatment program may increase the likelihood of achieving stable remission.

Thus, controlling the symptoms of generalized MG and reducing the medication burden are more effective with a comprehensive approach that combines thymectomy with optimally selected medical therapy, individualized patient selection, monitoring of clinical status, and consideration of immunological characteristics. The systematization of modern evidence indicates that the inclusion of thymectomy in the treatment of generalized MG is a justified component of the therapeutic strategy, which can increase the likelihood of achieving pharmacological remission and improve patients' quality of life.

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