A Study Examining The Concordance Between Patient And Physician Assessment Of The MG-ADL

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BACKGROUND

- Myasthenia Gravis (MG) is a rare autoimmune disease affecting vision, breathing, limb strength, and bulbar functioning.
- The most widely used primary endpoint in clinical trials is the MG-Activities of Daily Living (MG-ADL) scale, which assesses 8 common symptoms.
- In clinical trials, the scale is completed by the neurologist.
- In real-world evidence studies, patients often complete the MG-ADL themselves.
- The objective of this study was to assess the concordance between the patient- and neurologist-reported MG-ADL scores.

METHODS

Study design & Data collection

- An observational study was conducted in two medical centers:
  - IRCCS Istituto Neurologico Carlo Besta, Milan, Italy
  - Charité —Universitätsmedizin Berlin, Germany
- Patients were recruited during a scheduled appointment with their neurologists or during a MG-related hospital visit.
- The MG-ADL was completed by patients at home and by neurologists during the consultation in random order, within 2 days (allowed range 2-6 days) of each other.

Statistical analysis

- Concordance between the patient- and neurologist-reported MG-ADL assessments was calculated with Gwet's agreement coefficient for the 8 **items**.
- Intraclass Correlation Coefficients (ICC) were used to calculate agreement between the total **scores**.
- Concordance was also calculated for **subgroups** defined by country, sex, thymectomy status, antibody status
- **Difference scores** were calculated for age, sex, MGFA class, thymectomy (yes/no), antibody status, and number of comorbidities

RESULTS

Demographic Characteristics

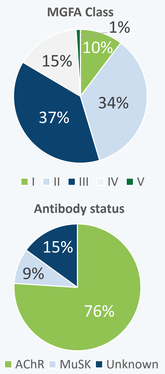
- A total of 146 patients were enrolled, **137** MG patients were included for analysis (**Table 1**).
- The mean (SD) age was 57.7 (17.8) years and 63% of all patients was female.
- All patients had comorbidities with cardiovascular and respiratory diseases being the most frequently occurring.
- The mean number of days between patient and physician assessment was **1.8** (SD: 1.0, Median: 2).

Distribution of MG-ADL scores

- Mean total MG-ADL scores were **7.5 and 8.1** assessed by patients and neurologists, respectively (**Table 2**).
- Neurologists assessed the patient's total symptom severity **0.6 points higher**, on a range of 0-24.
- This difference is lower than the MID for the MG-ADL, which has been estimated to be 2 points[1].

TABLE 1. Patient characteristics

		Total
		N=137
Country	Germany, n	95
	Italy, n	42
Sex	Female	63%
Age (years)	18-34	13%
	35-54	28%
	55 +	58%
MG crisis (last year)	Yes	25%
Thymectomy	Yes	46%



ABBREVIATIONS

MG-ADL: MG-Activities of Daily Living, MGFA: MG Foundation of America, SD: Standard deviation, Q1/Q3: First/Third quartile, Gwet's AC: Gwet's agreement coefficient, ICC: Intraclass correlation coefficients, CI: Confidence interval.

Concordance between Assessments

- The ICC for the MG-ADL total score was **0.94** (95% CI : 0.89-0.95), demonstrating **excellent concordance** (**Table 3**).
- Gwet's AC showed substantial to almost perfect agreement for 7 items and moderate agreement for 1 item (eyelid droop).
- The **concordance** between patient and physician assessments was **consistent** across country, sex, thymectomy status, and antibody status.
- Differences between patient and physician assessments were slightly larger in:
  - patients with higher disease severity;
  - and patients with more comorbidities.

TABLE 2. MG-ADL results by responder

MG-ADL score	Patient	Physician	Difference
	N =137	N =137	N =137
Mean (SD)	7.5 (4.3)	8.1 (4.5	0.6 (2.3)
Q1, Q3	4 - 10	5 - 11	0 - 2

TABLE 3. Gwet's AC and ICC for item level and total MG-ADL score

MG-ADL Items	Gwet's AC (p-value)
Chewing	0.77 (p<0.0001)
Double vision	0.74 (p<0.0001)
Breathing	0.73 (p<0.0001)
Rise from a chair	0.69 (p<0.0001)
Talking	0.66 (p<0.0001)
Swallowing	0.66 (p<0.0001)
Brush teeth or comb hair	0.58 (p<0.0001)
Eyelid droop	0.46 (p<0.0001)
	ICC (95% CI)
MG-ADL total score	**0.94 (0.89-0.95)**

- **Figure 1** shows a bubble plot of the observed MG-ADL scored by patients versus physicians (few outliers).
- **Figure 2** illustrates that most differences between the patient- and physician-assessed MG-ADL total score lie around zero, indicating excellent agreement

FIGURE 1. Patient vs physician MG-ADL total score

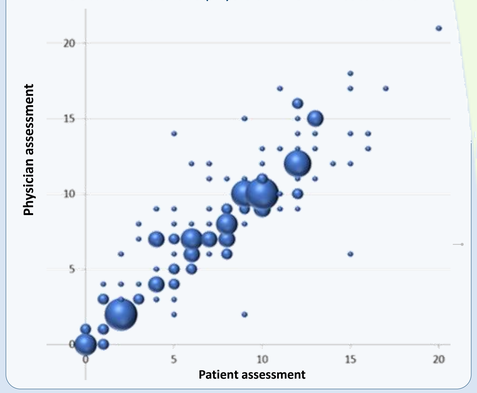
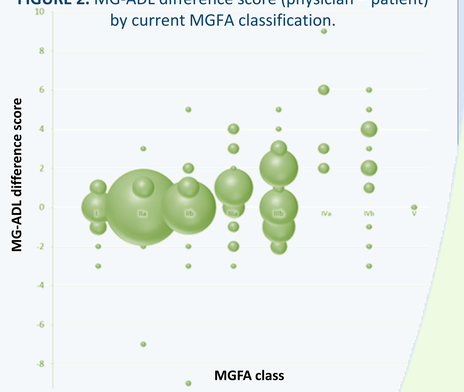


FIGURE 2. MG-ADL difference score (physician – patient) by current MGFA classification.



KEY TAKEAWAYS

Patients and neurologists have a similar assessment of the patient's MG symptom severity, using the MG-ADL.

Patient self-administration of the MG-ADL at home is appropriate for routine clinical follow-up.

STRENGHTS / LIMITATIONS

- Considering the profile of the nine patients removed from the dataset, no specific subgroup seemed to have difficulty with self-reporting.
- Results were similar in the Italian and German study centers and confirmed earlier findings from a similar study in South Korea by Lee et al. in 2018[2].
- Physicians rated patient's symptom burden as being more severe when patients were more severely affected by MG or had more than 4 co-morbidities. This could be the effect of coping mechanism commonly seen in patients.

CONCLUSIONS

- **This study demonstrated excellent concordance between self- and physician-assessment of the MG-ADL.**
- **This evidence supports patient self-administration of the MG-ADL in MG-related clinical practice and research.**

Created for the EAN 2023 Conference

Presented at EAN; July 4-7, 2023; Budapest, Hungary

DISCLOSURES AND ACKNOWLEDGMENTS

FS has received speaking honoraria and honoraria for attendance of advisory boards from Alexion and argenx BV; **AM** has received speaker honoraria, consulting fees or financial research support from Alexion, Argenx BV, Grifols, Hormosan, Janssen, Octapharma, and UCB. He serves as chairman of the medical advisory board of the German Myasthenia Gravis Society; **RM** has received speaking honoraria from Biomarin, Alexion and UCB, served on advisory boards for Alexion, argenx BV and UCB and received support for congress participation from Merck, Teva and Biogen; **SP** is an employee of argenx BV, the sponsor of the study; **SD**, owner of SHE, has been commissioned by argenx, the sponsor of the study, and is a member of the EuroQol Group; **NT** is an employee of SHE; **MFJ** is a paid consultants for argenx, the sponsor of this study, and received grant support from them.

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