### Supplementary Tables

#### Supplementary table 1: Individual patients’ data

| Refs, descriptive statistics | Patient no., sex | Age at disease onset [y] | Time to antibody diagnosis [mo after onset] | ASM, maximum DDD | Time to start of first immunotherapy [mo after onset] | No. of immuno-txs | Immunotherapies | Duration of immunotherapy [mo] | No. of relapses | Time to last follow-up [mo after onset] | From ab detection to last follow-up [mo] | Time to first seizure freedom [mo after onset] | Time to terminal seizure freedom at most recent follow-up [mo] | Duration to discontinuation of ASM [mo] |
|-------------------------------|------------------|---------------------------|---------------------------------------------|-------------------|------------------------------------------------|------------------|-----------------|-------------------------------|----------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|----------------|--------------------------------|
| 4, 5                          | NMDAR-1, m       | 14                        | 0.4                                         | 1.4               | 0.4                                           | 4                | Pred, IA, IVIG, MMF | 53.6                           | 5                | 82.0                             | 81.6                         | 14.1                         | 14.1                        | 67.9                         | 51.5                         |
| 4, 5                          | NMDAR-2, f       | 19                        | 0                                           | 1.1               | 0                                             | 4                | Pred, IA, Aza, Rtx | 89.4                           | 3                | 89.4                             | 89.4                         | 0.1                          | 41.0                        | 36.7                         | Ongoing                      |
| 4                            | NMDAR-3, f       | 2                         | 0.6                                         | 1.5               | 0.6                                           | 6                | Pred, IA, IVIG, Rtx, Cyc, MMF | 87.0                           | Never remitted | 87.6                             | 87.0                         | Ongoing                      | Ongoing                      | Ongoing                      | Ongoing                      |
| 4                            | NMDAR-4, f       | 17                        | 0.1                                         | 5                 | 0                                             | 4                | Pred, IA, Cyc, Rtx | 74.9                           | 1                | 74.9                             | 74.8                         | 6.0                          | 33.2                        | 41.7                         | Ongoing                      |
| 4, 5                          | NMDAR-5, f       | 18                        | 5.4                                         | 1.5               | 5.9                                           | 4                | Pred, IA, Rtx, Aza | 64.8                           | Never remitted | 70.7                             | 65.3                         | Ongoing                      | Ongoing                      | Ongoing                      | Ongoing                      |
| 4                            | NMDAR-6, f       | 6                         | 0                                           | 0.4               | 1                                             | 2                | Pred                        | 33.5                           | 1                | 67.7                             | 67.7                         | 7.1                          | 23.9                        | 43.8                         | 10.8                         |
| Med                           | m/f: 1/5         | 16                        | 0.3                                         | 1.5               | 0.5                                           | 4                |                             | 69.9                           | 2                | 78.5                             | 78.2                         | 6.6                          | 28.5                        | 42.8                         | 31.2                         |
| Min                           | 2                | 0.0                        | 0.4                                         | 0.0               | 2                                             |                 |                             | 33.5                           | 1                | 67.7                             | 65.3                         | 0.1                          | 14.1                        | 36.7                         | 10.8                         |
| Max                           | 19               | 5.4                        | 5.0                                         | 5.9               | 6                                             |                 |                             | 89.4                           | 5                | 89.4                             | 89.4                         | 14.1                         | 41.0                        | 67.9                         | 51.5                         |
| 4                            | LGI1-1, m        | 73                        | 4                                           | 2                 | 6.3                                           | 1                | IA                           | 15.9                           | 0                | 72.3                             | 68.3                         | 4.0                          | 4.0                         | 70.8                         | Ongoing                      |
| 4, 5                          | LGI1-2, m        | 59                        | 47.9                                        | 1                 | 6.1                                           | 5                | Pred, Aza, MMF, IA, IVIG | 117.2                          | 0                | 125.5                            | 77.6                         | 86.7                         | 86.7                        | 38.8                         | 7.2                          |
| 4                            | LGI1-3, f        | 51                        | 0.1                                         | 0                 | 1.1                                           | 1                | Pred                        | 0.2                            | 0                | 84.1                             | 84.0                         | 0.2                          | 0.2                         | 84.0                         | 1.7                          |
| 4, 7                          | LGI1-4, f        | 65                        | 12.7                                        | 1.3               | 13                                            | 4                | Pred, Aza, MMF, IA        | 82.6                           | 1                | 95.6                             | 82.9                         | 18.3                         | 37.4                        | 58.2                         | 24                           |
| 4, 8                          | LGI1-5, m        | 14                        | 1                                           | 0                 | 1.1                                           | 3                | Pred, PEX, MMF            | 15.6                           | 0                | 59.8                             | 58.8                         | 1.6                          | 1.6                         | 58.2                         | Never had ASM                 |
| 4                            | LGI1-6, m        | 76                        | 0.4                                         | 0                 | 0.6                                           | 3                | Pred, Aza, IVIG           | 90.7                           | 1                | 91.3                             | 90.9                         | 6.9                          | 53.5                        | 53.5                         | Ongoing                      |
| 4, 5                          | LGI1-7, m        | 73                        | 9.7                                         | 1.3               | 8.2                                           | 3                | Pred, IVIG, Aza           | 16                             | Never remitted | 68.2                             | 58.5                         | Ongoing                      | Ongoing                      | Ongoing                      | Ongoing                      |
| 4, 5                          | LGI1-8, m        | 50                        | 9.9                                         | 3.6               | 10.1                                          | 2                | Pred, Aza                  | 12                             | 0                | 85.5                             | 75.6                         | 10.2                         | 10.2                        | 75.3                         | Ongoing                      |
| Refs, descriptive statistics | Patient no. | sex | Age at disease onset [y] | Time to antibody diagnosis [mo after onset] | Time to start of first immunotherapy [mo after onset] | No. of immunotxs | Immunotherapies | Duration of immunotherapy [mo]¹ | No. of relapses | Time to last follow-up [mo after onset] | From ab detection to last follow-up [mo] | Time to first seizure freedom [mo after onset] | Time to terminal seizure freedom at most recent follow-up [mo] | Duration of seizure freedom at most recent follow-up [mo] | Duration to discontinuation of ASM [mo] |
|-----------------------------|------------|-----|--------------------------|---------------------------------------------|-------------------------------------------------|----------------|----------------|-------------------------------|----------------|-----------------------------------|--------------------------------------------|---------------------------------------------|---------------------------------------------|---------------------------------------------|-------------------------------------------|
| LGI1-9, m 67 | 7.6² | 1 | 1 | 2 | Pred, Aza | 150.2 | 2 | 172.0 | 164.4 | 1.2 | 119.7 | 52.5 | 151.2 |
| LGI1-10, m 49 | 0.1 | 2.5 | 0.4 | 1 | IA | 0.2 | 0 | 77.0 | 76.9 | 8.0 | 8.0 | 71.3 | 44 |
| LGI1-11, f 65 | 12.2 | 0.6 | 13.2 | 4 | Pred, IA, IVIG, Aza | 46.1² | 0 | 59.3 | 47.1 | 21.0 | 21.0 | 38.3 | 26.2 |
| Med m/f: 8/3 | 65 | 7.6 | 1.0 | 6.1 | 3 | 16.0 | 0 | 84.1 | 76.9 | 7.4 | 15.6 | 58.2 | 25.1 |
| Min | 14 | 0.1 | 0.0 | 0.4 | 1 | 0.2 | 0 | 59.3 | 47.1 | 0.2 | 0.2 | 38.3 | 1.7 |
| Max | 76 | 47.9 | 3.6 | 13.2 | 5 | 150.2 | 2 | 172.0 | 164.4 | 86.7 | 119.7 | 84.0 | 151.2 |
| CASPR2-1, m 75 | 20.3³ | 3.6 | 15.8 | 4 | Pred, Aza, IA, IVIG | 28.4 | 0 | 77.3 | 57.0 | 37.0 | 37.0 | 40.5 | Ongoing |
| CASPR2-2, m 56 | 17.6³ | 3.2 | 14.1 | 2 | Pred, Aza | 71.6² | 0 | 85.7 | 68.1 | 14.5 | 14.5 | 71.3 | Ongoing |
| CASPR2-3, m 75 | 0.8³ | 1.3 | 0.6 | 3 | Pred, IA, Aza | 55.1³ | 2 | 55.7 | 54.9 | 6.0 | 34.4 | 21.2 | 54.9 |
| CASPR2-4, m 69 | 15.4 | 1.6 | 15.5 | 3 | Pred, IA, MMF | 28.1 | 0 | 114.9 | 99.5 | Ongoing | Ongoing | Ongoing | Ongoing |
| CASPR2-5, m 68 | 18.2³ | 1.3 | 5.6 | 3 | Pred, Aza, IVIG | 60.9² | 2 | 66.5³ | 48.3 | 6.9 | 38.0 | 28.5 | Ongoing |
| CASPR2-6, m 69 | 8.9 | Unknown | 8.9 | 2 | Pred, MMF | 14.4 | 0 | 89.8 | 80.9 | 11.2 | 11.2 | 78.7 | Ongoing |
| CASPR2-7, m 70 | 0 | 1.9 | 1.4 | 4 | Pred, IA, MMF, Rtx | 38.5 | Never | 94.4 | 47.1 | 25.8 | 25.8 | 22.7 | Ongoing |
| CASPR2-8, m 49 | 1.2 | Unknown | 2 | 4 | Pred, Aza, IA, IVIG | 46.3² | 1 | 48.3 | 47.1 | Ongoing | Ongoing | Ongoing | Ongoing |
| GAD65-1, m 31 | 333.1 | 336 | 3 | Pred | 6.2 | Never | 421.2 | 88.1 | 421.2 | Ongoing | Ongoing | Ongoing |
| GAD65-2, f 24 | 94.6 | 3 | 118.1 | 4 | Pred, MMF, IA, IVIG | 32.8 | Never | 186.3 | 91.7 | 186.3 | Ongoing | Ongoing | Ongoing |
| GAD65-3, m 22 | 21.1 | 3.3 | 27.7 | 2 | Pred, IA | 4.8 | Never | 89.8 | 68.7 | 89.8 | Ongoing | Ongoing | Ongoing |
| GAD65-4, f 23 | 9.5 | 2.3 | 10 | 3 | Pred, Aza, IVIG | 165.7² | Never | 175.7 | 166.2 | 175.0 | Ongoing | Ongoing | Ongoing |
| Refs, descriptive statistics | Patient no., sex | Age at disease onset [y] | Time to antibody diagnosis [mo after onset] | ASM, maximum DDD | Time to start of first immunotherapy [mo after onset] | No. of immuno-txs | Immunotherapies | Duration of immunotherapy [mo]\(^1\) | No. of relapses | Time to last follow-up [mo after onset] | From ab detection to last follow-up [mo] | Time to first seizure freedom [mo after onset] | Time to terminal seizure freedom at most recent follow-up [mo] | Duration of seizure freedom at most recent follow-up [mo] | Duration to discontinuation of ASM [mo] |
|-----------------------------|-----------------|--------------------------|------------------------------------------|-----------------|-----------------------------------------------|----------------|----------------|----------------------------------|--------------|---------------------------------|-----------------|---------------------------------|-----------------|---------------------------------|-----------------|---------------------------------|
|                            | 2, 4, 6         | GAD65-5, f               | 8                                        | 280.1\(^4\)     | 6.8                                           | 279.5          | 4              | Pred, IA, IVIG, Cyc              | 36.9         | Never remitted                  | 323.8           | 43.7                            | 323.8           | Ongoing                        | Ongoing         | Ongoing                        |
|                            |                | GAD65-6, f               | 15                                       | 35               | 4.8                                           | 35             | 6              | Pred, MMF, IA, IVIG, Cyc, Natalizumab | 52.3         | Never remitted                  | 165.3           | 130.3                           | 165.3           | Ongoing                        | Ongoing         | Ongoing                        |
|                            | 4, 6           | GAD65-7, f               | 21                                       | 61.2\(^4\)      | 5.8                                           | 7.1            | 7              | Pred, Aza, IA, IVIG, Rtx, Cyc, Basiliximab | 141.5        | Never remitted                  | 162.3           | 101.1                           | 162.3           | Ongoing                        | Ongoing         | Ongoing                        |
|                            | 4, 5           | GAD65-8, f               | 31                                       | 72               | 4.2                                           | 39.6           | 2              | Pred, IA                       | 37.4         | Never remitted                  | 158.9           | 86.9                            | 158.9           | Ongoing                        | Ongoing         | Ongoing                        |
|                            | 4              | GAD65-9, f               | 15                                       | 117.3\(^4\)     | 3.8                                           | 13.2           | 4              | Pred, IVIG, Cyc, Natalizumab      | 128.5        | Never remitted                  | 200.1           | 82.8                            | 200.1           | Ongoing                        | Ongoing         | Ongoing                        |
|                            | 4              | GAD65-10, f              | 7                                        | 0                | 2.5                                           | 13.8           | 2              | Pred, Rtx,                      | 29.7         | Never remitted                  | 46.5            | 46.5                            | 46.5            | Ongoing                        | Ongoing         | Ongoing                        |
|                            | 4, 5           | GAD65-11, f              | 23                                       | 138.1            | 3                                             | 138.6          | 2              | Pred, IA                       | 6            | Never remitted                  | 228.3           | 90.2                            | 228.3           | Ongoing                        | Ongoing         | Ongoing                        |
|                            | 4              | GAD65-12, f              | 15                                       | 1                | 2.8                                           | 1.5            | 1              | Pred                           | 5            | 0                               | 36.4            | 36.4                            | 4               | 3.0                            | 32.4            | Never had ASM                  |
|                            | 4              | GAD65-13, f              | 16                                       | 37.6             | 0                                             | 40.9           | 1              | Pred                           | 61.4\(^2\)   | Never remitted                  | 102.3           | 101.9                           | Ongoing         | Ongoing                        | Ongoing         | Ongoing                        |

\(^{1}\)Duration from first to final dose (intervals without immunotherapy included). \(^{2}\)Duration is identical with difference between “last follow-up” and “start of immunotherapy”, i.e., immunotherapy was ongoing at most recent follow-up. \(^{3}\)One subclinical seizure pattern recorded on long-term EEG 82.8 months after disease onset. Not counted here. \(^{4}\)First titer in this laboratory; probably, the antibody diagnosis was made in an external lab earlier on. \(^{5}\)Died from liver failure.
**Supplementary table 2: Year-wise proportion of seizure free patients**

| Delay (years) | NMDAR antibodies | LGI1 antibodies* | CASPR2 antibodies | GAD/Ma2 antibodies** | Ma2 antibodies |
|---------------|------------------|------------------|-------------------|----------------------|---------------|
|               | First seizure freedom | Terminal seizure freedom | First seizure freedom | Terminal seizure freedom | First seizure freedom | Terminal seizure freedom |
| 1             | 67% | 0% | 64% | 46% | 38% | 13% | 8% | 8% | 8mo | 0% | 0% |
| 2             | 83% | 33% | 82% | 55% | 50% | 25% | 8% | 8% | 0% | 0% |
| 3             | 83% | 50% | 82% | 55% | 63% | 50% | 8% | 8% | 0% | 0% |
| 4             | 83% | 67% | 82% | 64% | 75% | 75% | 8% | 8% | 0% | 0% |

*After 10 years: 91% terminal seizure freedom; **only one patient with GAD65 antibodies became seizure free (within 4 months).
**Supplementary table 3:** Patients achieving first seizure freedom after >1 year

| Patient | First seizure stop | Terminal seizure stop | | | | Duration of terminal seizure freedom at most recent follow-up [mo] | Time to terminal ASM freedom | Duration of ASM freedom at most recent follow-up |
|---------|-------------------|-----------------------|---|---|---|---|---|---|
| Patient | Time to [mo] | Modification of immuno-tx | Modification of ASM | Time to [mo] | Modification of immuno-tx | Modification of ASM | | |
| NMDAR-1 | 14 | Steroids introduced again plus MMF | Increase from shortly discontinued ASM to 0.7 DDD | = first seizure stop | 68 | 52 | 31 |
| CASPR2-8 | 26 | Steroids introduced again plus MMF | From 0.5 to 2.0 DDD | = first seizure stop | 23 | Ongoing ASM | - |
| LGI1-2 | 87 | MMF | None<sup>1</sup> | = first seizure stop | 39 | 7 | 118 |
| LGI1-4 | 18 | Steroids introduced again | Introduction of ASM, 1.0 DDD | 37 | Steroids introduced again plus MMF | None<sup>2</sup> | 58 | 24 | 72 |
| LGI1-11 | 21 | Steroids introduced again plus IA | None | = first seizure stop | 38 | 26 | 33 |
| CASPR2-1 | 37 | IVIG | From 2.5 to 3.0 DDD | = first seizure stop | 41 | Ongoing ASM | - |
| CASPR2-2 | 15 | Steroids | Introduction of ASM, 1.3 DDD | = first seizure stop | 71 | Ongoing ASM | - |

<sup>1</sup>ASM stopped 80 mo before by patient’s decision; <sup>2</sup>ASM stopped 13 mo before by patient’s decision

Abbreviations: ASM, anti-seizure medication; CASPR2, contactin-associated protein-2; DDD, defined daily doses (according to World Health Organization); IA, immunoadsorption; immuno-tx, immunotherapy; IVIG, intravenous immunoglobulins; LGI1, leucine-rich glioma inactivated protein 1; MMF, mycophenolate-mofetil; mo, months; NMDAR, N-methyl-D-aspartate receptor
References

1. Bien CG, Urbach H, Schramm J, Soeder BM, Becker AJ, Voltz R, et al. Limbic encephalitis as a precipitating event in adult-onset temporal lobe epilepsy. Neurology. 2007; 69: 1236-44.

2. Bien CG, Vincent A, Barnett MH, Becker AJ, Blümcke I, Graus F, et al. Immunopathology of autoantibody-associated encephalitides: clues for pathogenesis. Brain. 2012; 135: 1622-38.

3. Bien CG, Mirzadjanova Z, Baumgartner C, Onugoren MD, Grunwald T, Holtkamp M, et al. Anti-contactin-associated protein-2 encephalitis: relevance of antibody titres, presentation and outcome. Eur J Neurol. 2017; 24: 175-86.

4. Bien CG, Bien CI, Dogan Onugoren M, De Simoni D, Eigler V, Haensch C-A, et al. Routine diagnostics for neural antibodies, clinical correlates, treatment and functional outcome. J Neurol. 2020; in press.

5. Dogan Onugoren M, Golombeck KS, Bien C, Abu-Tair M, Brand M, Bulla-Hellwig M, et al. Immunoadsorption therapy in autoimmune encephalitides. Neurol Neuroimmunol Neuroinflamm. 2016; 3: e207.

6. Malter MP, Frisch C, Zeitler H, Surges R, Urbach H, Helmstaedter C, et al. Treatment of immune-mediated temporal lobe epilepsy with GAD antibodies. Seizure. 2015; 30: 57-63.

7. Scherfeld D, Bien CG. Antikörper-vermittelte Epilepsien. Klin Neurophys. 2014; 45: 222-9.

8. Schimmel M, Frühwald MC, Bien CG. Limbic encephalitis with LGI1 antibodies in a 14-year-old boy. Eur J Paediatr Neurol. 2018; 22: 190-3.