eTable 1. Ancillary testing, Treatment and Prognosis (n=17)

Parameter	values	
Hyponatremia (%)	14 (82%)	Sodium Range (116-133)
LGI1 antibodies (%) (n=13)[a, b]		
serum positive, CSF negative	6 (46%)	
serum positive, CSF positive	7 (54%)	
CSF (%) (n=12)[b]		
Pleocytosis	2 (15%)	Range (11-116)
Elevated protein	6 (35%)	Median 58, Range (47-146)
MRI (%)		
MTL	7 (41%)	
BG	2 (12%)	
EEG (%) (n=16)		
Epileptic	10 (62%)	
Nonspecific	4 (25%)	
Normal	2 (12%)	
Treatment (%)		
Initial		
Steroids	17 (100%)	
IVIG	3 (18%)	
Plasmapheresis	3 (18%)	
Maintenance (n=16)		
Steroids	10 (62%)	
Azathioprine	8 (50%)	
IVIG	5 (31%)	
Mycophenolate Mofetil	4 (25%)	
Rituximab	4 (25%)	
Relapse (%)	5 (29%)	
mRS on last follow up (%)		
1	13 (76%)	
2	1 (6%)	
3	1 (6%)	
4	2 (12%)	

a- All patients were diagnosed based on the presence of anti LGI1 antibodies in the serum.
b- Of the seventeen patients, thirteen had data available regarding CSF profile and antibodies.
BG – basal ganglia abnormalities; IVIG – intravenous immunoglobulin; mRS – modified Rankin score; MTL – mesial temporal lobe abnormalities;

eTable 2. The frequency of most prevalent haplotypes among patients with anti-LGI1E compared to expected frequency calculated from the "Ezer Mizion" BMDR

Haplotype	Expected frequency*	Observed frequency among patients	OR	p-value	CI
A*26:01~B*38:01~C*12:03~DQB1*03:02~DRB1*04:02	2.50%	20.10%	8.3	6.01E-11	0.42
A*02:01~B*13:02~C*06:02~DQB1*02:02~DRB1*07:01	0.30%	5.90%	21	2.09709E-09	0.08
A*02:05~B*50:01~C*06:02~DQB1*02:02~DRB1*07:01	1.10%	8.80%	8.36	3.13177E-05	0.18

*Expected frequency was calculated based on a pool of 1,000,000 ethnically matched controls.
*only alleles with P values < 0.05 are presented.
OR – Odds ratio, CI - Confidence interval. The p values are after Bonferroni correction.

eTable 3A. P values of Chi-square test for each DQ allele when controlling for a specific DRB1 allele.

	DQB1*02:02	DQB1*03:01	DQB1*03:02	DQB1*03:03	DQB1*03:04	DQB1*03:05	DQB1*05:01	DQB1*05:03	DQB1*06:03
DRB1*01:01	NaN	NaN	NaN	NaN	NaN	NaN	0.25768	NaN	NaN
DRB1*01:02	NaN	NaN	NaN	NaN	NaN	NaN	0.25768	NaN	NaN
DRB1*04:02	NaN	NaN	0.25768	NaN	NaN	NaN	NaN	NaN	NaN
DRB1*04:03	0.949431	NaN	0.621207	NaN	0.919639	NaN	NaN	NaN	NaN
DRB1*04:08	NaN	NaN	NaN	NaN	0.25768	NaN	NaN	NaN	NaN
DRB1*07:01	0.321166	NaN	NaN	0.542956	NaN	NaN	NaN	NaN	NaN
DRB1*11:01	NaN	0.206093	NaN	NaN	NaN	NaN	NaN	NaN	NaN
DRB1*11:04	NaN	0.686669	NaN	NaN	NaN	NaN	NaN	NaN	NaN
DRB1*14:01	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.25768	NaN
DRB1*14:07	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN

*Values represent scores of one-sided P-value.

eTable 3B. The Chi-square p-values for each DQ-DR haplotype pair, comparing patients with anti-LGI1E to healthy controls from the "Ezer Mizion" BMDR

	DQB1*02:02	DQB1*03:01	DQB1*03:02	DQB1*03:03	DQB1*03:04	DQB1*03:05	DQB1*05:01	DQB1*05:03	DQB1*06:03
DRB1*01:01	NaN	NaN	NaN	NaN	NaN	NaN	0.576372	NaN	NaN
DRB1*01:02	NaN	NaN	NaN	NaN	NaN	NaN	0.848636	NaN	NaN
DRB1*04:02	NaN	NaN	9E-06	NaN	NaN	NaN	NaN	NaN	NaN
DRB1*04:03	0.886076	NaN	0.264301	NaN	0.819714	0.270942	NaN	NaN	NaN
DRB1*04:08	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
DRB1*07:01	6.2E-05	NaN	NaN	0.01585	NaN	NaN	NaN	NaN	NaN
DRB1*11:01	NaN	0.564249	NaN	NaN	NaN	NaN	NaN	NaN	NaN
DRB1*11:04	NaN	0.177669	NaN	NaN	NaN	NaN	NaN	NaN	0.331262
DRB1*14:01	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.8813	NaN
DRB1*14:07	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN

*NaN values represent DR-DQ combinations with zero expected and observed cases.

*Values represent scores of one-sided P-value.

eTable4 A,B. DRB1-DQB1 pairs percentages in haplotypes in Sephardic and Ashkenazi populations. The first table is for Sephardic, and the second table is for Ashkenazi.

	DQB1* 02:02	DQB1* 02:07	DQB1* 03:01	DQB1* 03:02	DQB1* 03:03	DQB1* 03:04
DRB1*01:01	0	0	0	0	0	0
DRB1*01:02	0	0	0	0	0	0
DRB1*01:03	0	0	0	0	0	0
DRB1*03:01	0.131	0	0.1027	0	0	0
DRB1*03:02	0	0	0	0	0	0
DRB1*03:04	0	0	0	0	0	0
DRB1*03:15	0	0	0	0	0	0
DRB1*04:01	0	0	0	0.4102	0	0
DRB1*04:02	0	0	0	5.5358	0	0
DRB1*04:03	0.1207	0	0	6.0097	0	0
DRB1*04:04	0	0	0	0.5091	0	0
DRB1*04:05	1.2157	0	0	0.6588	0	0
DRB1*04 (none 04:02)	1.3364	0	0	7.5878	0	0

	DQB1* 02:02	DQB1* 03:01	DQB1* 03:02	DQB1* 03:03	DQB1* 03:04	DQB1* 03:05	DQB1* 03:19
DRB1*01:01	0	0	0	0	0	0	0
DRB1*01:02	0	0	0	0	0	0	0
DRB1*01:03	0	0.2292	0	0	0	0	0
DRB1*01:20	0	0	0	0	0	0	0
DRB1*03:01	0	0	0	0	0	0	0
DRB1*03:124	0	0	0	0	0	0	0
DRB1*04:01	0	0.5175	0.3396	0	0	0	0
DRB1*04:02	0	0	10.37	0	0	0	0
DRB1*04:03	0	0	1.3202	0	0.3055	1.2190	0
DRB1*04:04	0	0	0.6040	0	0	0	0
DRB1*04:05	0.2719	0	0.5465	0	0	0	0
DRB1*04:06	0	0	0	0	0	0	0
DRB1*04 (none 04:02)	0.2719	0.5175	2.8103	0	0.3055	1.219	0

*Since are haplotypes, we ignore deviation from HW, we only observe LD.

eTable 4. HLA typing of the patients when the phases are unknown.

ID	HLA-A	HLA-B	HLA-C	HLA-DRB1	HLA-DQB1	HLA-DPB1	HLA-DQA1
1	A*03:01	B*07:02	C*07:02	DRB1*04:02	DQB1*03:02	DPB1*04:01	DQA1*02:01
	A*26:01	B*38:01	C*12:03	DRB1*07:01	DQB1*03:03	DPB1*19:01	DQA1*03:01
2	A*01:01	B*38:01	C*06:02	DRB1*11:01	DQB1*03:01	DPB1*04:01	DQA1*05:05
	A*02:01	B*49:01	C*12:03	DRB1*11:04	DQB1*03:01	DPB1*04:02	DQA1*05:05
3	A*02:01	B*13:02	C*01:02	DRB1*07:01	DQB1*02:02	DPB1*04:01	DQA1*01:04
	A*68:01	B*55:01	C*06:02	DRB1*14:07	DQB1*05:03	DPB1*04:02	DQA1*02:01
4	A*01:01	B*38:01	C*04:01	DRB1*04:02	DQB1*02:02	DPB1*04:01	DQA1*02:01
	A*26:01	B*44:03	C*12:03	DRB1*07:01	DQB1*03:02	DPB1*04:01	DQA1*03:01
5	A*02:05	B*38:01	C*06:02	DRB1*04:02	DQB1*02:02	DPB1*02:01	DQA1*02:01
	A*31:01	B*50:01	C*12:03	DRB1*07:01	DQB1*03:02	DPB1*04:01	DQA1*03:01
6	A*01:01	B*50:01	C*06:02	DRB1*07:01	DQB1*02:02	DPB1*04:02	DQA1*01:04
	A*11:01	B*51:01	C*15:02	DRB1*14:01	DQB1*05:03	DPB1*104:01	DQA1*02:01
7	A*01:01	B*44:03	C*04:01	DRB1*07:01	DQB1*02:02	DPB1*04:01	DQA1*02:01
	A*23:01	B*57:01	C*06:02	DRB1*07:01	DQB1*02:02	DPB1*104:01	DQA1*02:01
8	A*25:01	B*38:01	C*12:03	DRB1*04:02	DQB1*03:02	DPB1*04:01	DQA1*03:01
	A*26:01	B*38:01	C*12:03	DRB1*04:02	DQB1*03:02	DPB1*04:01	DQA1*03:01
9	A*02:01	B*35:03	C*07:02	DRB1*04:08	DQB1*03:03	DPB1*04:01	DQA1*02:01
	A*11:01	B*39:01	C*12:03	DRB1*07:01	DQB1*03:04	DPB1*04:02	DQA1*03:03
10	A*03:01	B*38:01	C*04:01	DRB1*01:02	DQB1*03:02	DPB1*02:01	DQA1*01:01
	A*26:01	B*44:03	C*12:03	DRB1*04:02	DQB1*05:01	DPB1*04:01	DQA1*03:01
11	A*26:01	B*38:01	C*02:02	DRB1*01:02	DQB1*03:02	DPB1*04:01	DQA1*01:01
	A*33:01	B*44:03	C*12:03	DRB1*04:02	DQB1*05:01	DPB1*04:01	DQA1*03:01
12	A*24:02	B*13:02	C*06:02	DRB1*04:02	DQB1*02:02	DPB1*04:01	DQA1*02:01
	A*26:01	B*38:01	C*12:03	DRB1*07:01	DQB1*03:02	DPB1*17:01	DQA1*03:01
13	A*02:05	B*13:02	C*06:02	DRB1*07:01	DQB1*02:02	DPB1*17:01	DQA1*02:01
	A*30:01	B*50:01	C*06:02	DRB1*07:01	DQB1*02:02	DPB1*104:01	DQA1*02:01
14	A*01:01	B*13:02	C*04:01	DRB1*07:01	DQB1*02:02	DPB1*02:01	DQA1*01:03
	A*02:01	B*35:02	C*06:02	DRB1*11:04	DQB1*06:03	DPB1*04:02	DQA1*02:01
15	A*26:01	B*35:02	C*04:01	DRB1*04:02	DQB1*03:02	DPB1*04:01	DQA1*03:01
	A*33:01	B*38:01	C*12:03	DRB1*04:03	DQB1*03:05	DPB1*04:01	DQA1*03:01
16	A*24:03	B*35:01	C*04:01	DRB1*04:02	DQB1*02:02	DPB1*17:01	DQA1*02:01
	A*26:01	B*35:01	C*04:01	DRB1*07:01	DQB1*03:02	DPB1*17:01	DQA1*03:01
17	A*02:05	B*44:03	C*04:01	DRB1*01:01	DQB1*02:02	DPB1*04:01	DQA1*01:01
	A*23:01	B*50:01	C*06:02	DRB1*07:01	DQB1*05:01	DPB1*04:02	DQA1*02:01

*Alleles in the same row are not necessarily in the same phase.

eTable 5. Imputed haplotype pairs of the patients. Each row represents the patient ID and his two haplotypes.

1	A*26:01~B*38:01~C*12:03~DQB1*03:02~DRB1*04:02	A*03:01~B*07:02~C*07:02~DQB1*03:03~DRB1*07:01
2	A*01:01~B*49:01~C*06:02~DQB1*03:01~DRB1*11:01	A*02:01~B*38:01~C*12:03~DQB1*03:01~DRB1*11:04
3	A*02:01~B*13:02~C*06:02~DQB1*02:02~DRB1*07:01	A*68:01~B*55:01~C*01:02~DQB1*05:03~DRB1*14:07
4	A*26:01~B*38:01~C*12:03~DQB1*03:02~DRB1*04:02	A*01:01~B*44:03~C*04:01~DQB1*02:02~DRB1*07:01
5	A*31:01~B*38:01~C*12:03~DQB1*03:02~DRB1*04:02	A*02:05~B*50:01~C*06:02~DQB1*02:02~DRB1*07:01
6	A*01:01~B*50:01~C*06:02~DQB1*02:02~DRB1*07:01	A*11:01~B*51:01~C*15:02~DQB1*05:03~DRB1*14:01
7	A*23:01~B*44:03~C*04:01~DQB1*02:02~DRB1*07:01	A*01:01~B*57:01~C*06:02~DQB1*02:02~DRB1*07:01
8	A*25:01~B*38:01~C*12:03~DQB1*03:02~DRB1*04:02	A*26:01~B*38:01~C*12:03~DQB1*03:02~DRB1*04:02
9	A*11:01~B*35:03~C*12:03~DQB1*03:04~DRB1*04:08	A*02:01~B*39:01~C*07:02~DQB1*03:03~DRB1*07:01
10	A*03:01~B*44:03~C*04:01~DQB1*05:01~DRB1*01:02	A*26:01~B*38:01~C*12:03~DQB1*03:02~DRB1*04:02
11	A*33:01~B*44:03~C*02:02~DQB1*05:01~DRB1*01:02	A*26:01~B*38:01~C*12:03~DQB1*03:02~DRB1*04:02
12	A*26:01~B*38:01~C*12:03~DQB1*03:02~DRB1*04:02	A*24:02~B*13:02~C*06:02~DQB1*02:02~DRB1*07:01
13	A*30:01~B*13:02~C*06:02~DQB1*02:02~DRB1*07:01	A*02:05~B*50:01~C*06:02~DQB1*02:02~DRB1*07:01
14	A*02:01~B*13:02~C*06:02~DQB1*02:02~DRB1*07:01	A*01:01~B*35:02~C*04:01~DQB1*06:03~DRB1*11:04
15	A*26:01~B*38:01~C*12:03~DQB1*03:02~DRB1*04:02	A*33:01~B*35:02~C*04:01~DQB1*03:05~DRB1*04:03
16	A*24:03~B*35:01~C*04:01~DQB1*03:02~DRB1*04:02	A*26:01~B*35:01~C*04:01~DQB1*02:02~DRB1*07:01
17	A*23:01~B*44:03~C*04:01~DQB1*05:01~DRB1*01:01	A*02:05~B*50:01~C*06:02~DQB1*02:02~DRB1*07:01