

Supplementary Material

RESEARCH

Age-dependent favorable visual recovery despite significant retinal atrophy in pediatric MOGAD: how much retina do you really need to see well?

Running head:

Age-dependent visual recovery in MOGAD-ON

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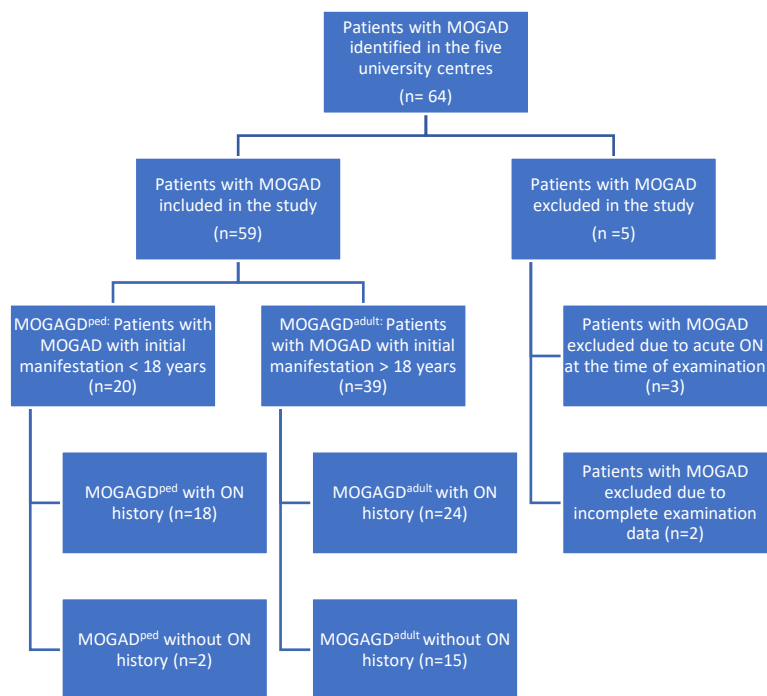
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Supplementary material

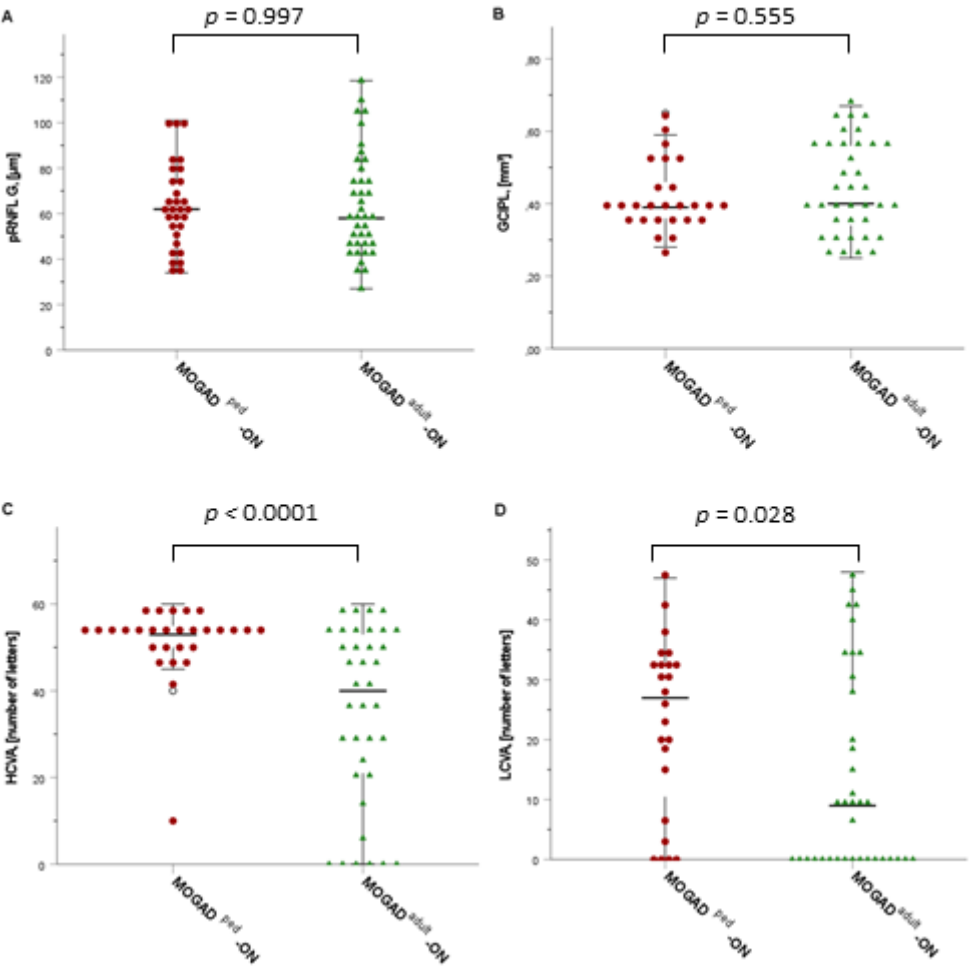
Supplementary Figure 3: Flow chart of patients included in the study

During the study period 64 MOGAD patients were identified in participating centers. Five patients were excluded due to incomplete examination data (n=2) or an acute ON at the time of examination (n=3). Depending on the age of manifestation patients were divided into 2 groups: group (1) 20 MOG-IgG-patients with initial manifestation < 18 years (MOGAD^{ped}) and group (2) 39 MOG-IgG-positive patients with initial manifestation ≥ 18 years (MOGAD^{adult}).



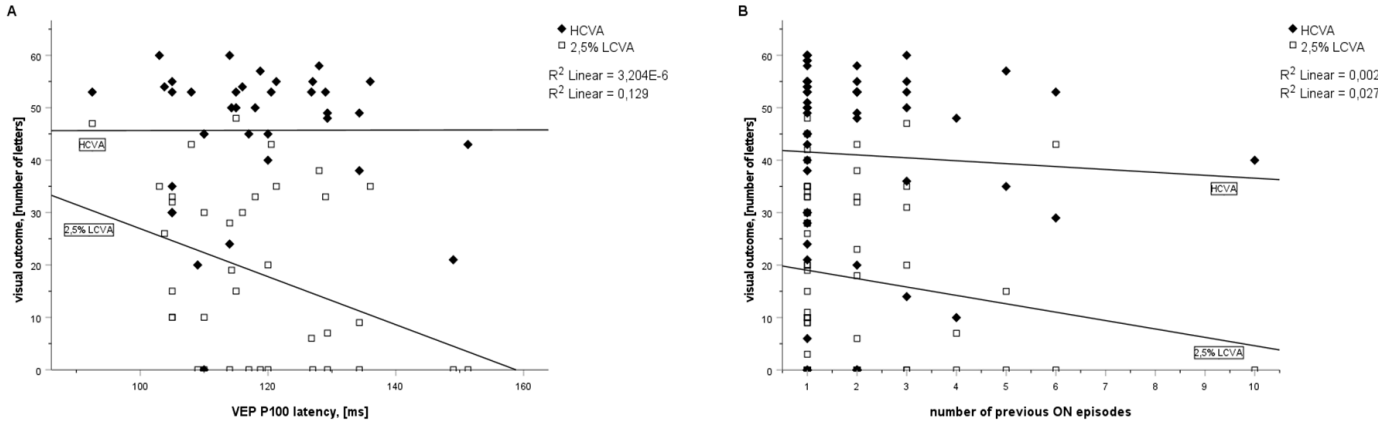
Supplementary Figure 4: Beeswarm plots showing the distribution of pRNFL G thickness (A), GCIPL volume (B), HCVA (C) and 2,5% LCVA (D) in MOGAD^{ped}-ON and MOGAD^{adult}-ON.

Despite profound neuroaxonal retinal atrophy in both groups, MOGAD^{adult}-ON eyes showed significantly worse visual outcome (HCVA and 2,5% LCVA) in comparison to MOGAD^{ped}-ON.



Supplementary Figure 5: Scatterplots of VEP P100 latency (A) and number of previous ON (B) against visual outcome (HCVA and 2,5% LCVA).

Neither the number of previous ON nor P100-latency correlated with HCVA ($\rho=0.030$ CI95% -0.288 - 0.152, $p=0.840$ [number of previous ON] and $\rho=-0.028$ CI95% -0.354 -0.290, $p=0.851$ [VEP P100 latency]) or LCVA ($\rho=-0.237$ CI95% -0.422 -0.106, $p=0.104$ [number of previous ON] and $\rho=-0.263$ CI95% -0.503 -0.078, $p=0.071$ [VEP P100 latency]).



Suppl. Table 3	MOGAD^{ped}-ON (n = 18)	MOGAD^{adult}-ON (n = 24)	p
Age at initial manifestation, median (range)	10 (4-15)	33 (19-56)	<0.001
Females, n (%)	12 (66.7%)	20 (83.3%)	0.067
Ethnicity	18 Caucasian	22 Caucasian 2 Asian	0.151
Disease duration (in years), median (range)	3 (0-16)	7 (0-24)	0.280
Number of ON episodes per ON eye, mean (SD); median (range)	1.8 (1.3); 1 (5)	2.0 (1.7); 1 (9)	0.864
Time interval between examination and ON onset in months median (range)	7 (6-129)	10 (6-155)	0.2
ON eyes with moderate to severe visual impairment (HCVA logMAR > 0.5), n (%)	1 (3.3%)	13 (31.0%)	0.004

Supplementary Table 3: Demographic and main clinical characteristics of pediatric and adult cohorts with ON history (MOGAD-ON)

Abbreviations: MOGAD myelin oligodendrocyte glycoprotein-antibody-associated disease, ON optic neuritis, SD standard deviation

Suppl. Table 4	Pediatric patients		Adult patients		Pediatric patients MOGAD-ON vs. MOGAD-NON eyes		Adult patients MOGAD-ON vs. MOGAD-NON eyes		MOGAD-ON eyes Pediatric vs. adult patients		MOGAD-NON eyes Pediatric vs. adult patients	
	ON eyes (30 eyes, mean± SD)	non-ON eyes (10 eyes, mean± SD)	ON eyes (42 eyes, mean± SD)	non-ON eyes (36 eyes, mean± SD)	B	p	B	p	B	p	B	p
pRNFL G	63.12 ± 18.74	90.30 ± 13.40	64.26 ± 22.85	96.64 ± 20.67	23.90	< 0.001	24.92	0.001	0.02	0.997	-6.34	0.292
pRNFL S	78.90 ± 28.03	115.60 ± 18.46	82.00 ± 31.70	118.46 ± 35.66	31.49	< 0.001	27.76	0.01	-1.39	0.869	-2.86	0.754
pRNFL I	81.33 ± 26.94	114.00 ± 15.85	82.82 ± 33.35	119.56 ± 31.96	28.28	0.001	25.34	0.021	0.13	0.989	-5.56	0.464
pRNFL T	46.33 ± 19.75	64.80 ± 21.39	46.13 ± 18.13	69.06 ± 18.23	16.68	0.029	19.32	0.001	0.82	0.884	-4.26	0.594
pRNFL N	43.23 ± 12.82	66.80 ± 12.04	46.26 ± 17.83	76.46 ± 20.24	21.67	< 0.001	24.23	< 0.001	-2.28	0.595	-9.66	0.061
pRNFL PMB	35.70 ± 13.72	49.50 ± 12.75	38.41 ± 18.77	54.03 ± 18.49	12.42	0.012	11.26	0.013	-2.17	0.631	-4.53	0.408
pRNFL N/T ratio	1.05 ± 0.37	1.12 ± 0.37	1.08 ± 0.57	1.14 ± 0.32	0.037	0.771	0.01	0.927	-0.02	0.86	-0.03	0.835
TMV	2.19 ± 0.11	2.30 ± 0.13	2.22 ± 0.12	2.31 ± 0.11	0.09	0.021	0.09	0.048	-0.03	0.484	-0.02	0.718
mRNFL	0.12 ± 0.02	0.14 ± 0.01	0.13 ± 0.02	0.14 ± 0.03	0.02	< 0.001	0.01	0.537	-0.01	0.012	-0.01	0.278
mGCIPL	0.42 ± 0.09	0.57 ± 0.08	0.44 ± 0.13	0.57 ± 0.08	0.15	< 0.001	0.10	0.012	-0.02	0.555	0.01	0.853
mINL	0.28 ± 0.03	0.26 ± 0.02	0.29 ± 0.04	0.26 ± 0.02	-0.03	0.001	- 0.022	0.017	-0.003	0.793	-0.00005	0.994
mOPONL	0.77 ± 0.07	0.74 ± 0.08	0.77 ± 0.05	0.75 ± 0.05	-0.036	0.307	0.001	0.949	0.006	0.779	- 0.02	0.589
VEP P100 latency	117.86 ± 10.67	112.44 ± 9.59	117.99 ± 14.51	118.15 ± 9.84	-4.50	0.324	-1.49	0.790	-0.32	0.946	-5.71	0.115
VEP amplitude	10.57 ± 6.12	8.52 ± 4.47	5.76 ± 2.79	7.61 ± 5.21	-2.66	0.235	2.78	0.049	-		-	
HC VA	51.36 ± 9.33	55.60 ± 8.88	34.97 ± 20.57	52.03 ± 8.67	4.35	0.245	17.03	0.002	16.36	< 0.0001	3.57	0.325
2.5% LC VA	22.83 ± 14.62	25.60 ± 13.94	13.54 ± 16.44	29.52 ± 13.89	0.277	0.963	12.56	0.017	10.36	0.028	-3.92	0.451

Supplementary Table 4. Comparison of all OCT and VEP measures as well as visual acuity between in ON- and non-ON-eyes in pediatric and adult MOGAD patients

Abbreviations: MOGAD-ON eyes with a history of ON, MOGAD-NON eyes without history of ON, pRNFL peripapillary retinal nerve fibre layer (G global, S superior, I inferior, T temporal, N nasal, PMB papillomacular bundle, N/T nasal/temporal ratio), TMV total macular volume, mRNFL macular RNFL, mGCIPL macular ganglion cell and inner plexiform layer, mINL macular inner nuclear layer, mOPONL macular outer plexiform outer nuclear layer, HC high-contrast, LC low-contrast. pRNFL thickness are expressed in μm and macular volumes in mm^3 , VEP P100 latency in ms, VEP amplitude in μV , VA in number of correctly stated letters. GEE analysis: B regression coefficient, p-value: significant results $p < 0.05$ are indicated in bold letters.