



Retinal Abnormalities in Schizophrenia

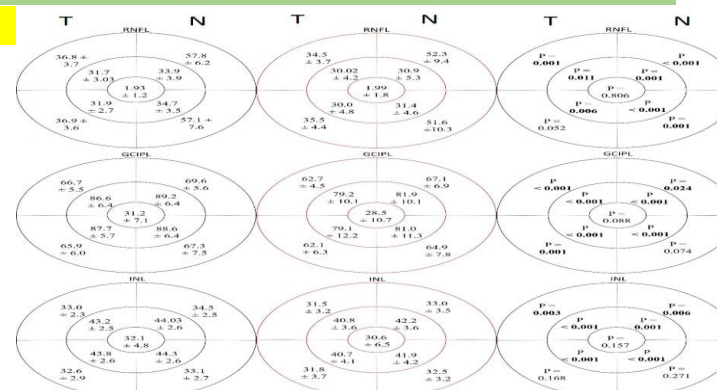
Maha Shahin, MD^(1,2); Ali Lamin, MD⁽¹⁾; Mohamed El-Sayed, MD⁽¹⁾; Mona AbdelKader⁽¹⁾, MD; Ahmed M El Shamy, MD⁽¹⁾;
Ibrahim H Rasheed, MD⁽¹⁾; Aya M Hashish, MD⁽¹⁾; Amgad El Nokrashy, MD⁽¹⁾
(1) Mansoura university, Egypt, (2) Fakeeh college of medical sciences, KSA

This is a prospective case control study including 34 patients diagnosed with schizophrenia compared with 32 matched controls. Patients were interviewed and diagnosed using Structured Clinical Interview for DSM-IV Axis I Disorders. Symptoms severity was measured by Positive and Negative Syndrome Scale (PANSS). Retinal changes were examined in both eyes using Optical coherence tomography (OCT) and multifocal Electroretinography (mfERG)

Table 2: showing macular volume results

	Normal (n= 64)	Schizophrenia (n= 67)	95% CI	P value
TRT Fovea	0.18 ± 0.016	0.18 ± 0.017	0.00, 0.01	0.145
TRV 3mm Circle	2.14 ± 0.102	2.05 ± 0.139	0.05, 0.14	< 0.001
TRV 6mm Circle	8.02 ± 0.305	7.74 ± 0.453	0.15, 0.42	< 0.001
RNFLV 1 mm Circle	0.00 ± 0.001	0.00 ± 0.001	0.00, 0.00	0.806
RNFLV 3mm Circle	0.21 ± 0.016	0.19 ± 0.024	0.01, 0.02	< 0.001
RNFLV 6mm Circle	1.21 ± 0.097	1.12 ± 0.129	0.05, 0.13	< 0.001
GCIPLV 1mm Circle	0.02 ± 0.006	0.02 ± 0.008	0.00, 0.00	0.088
GCIPLV 3mm Circle	0.58 ± 0.036	0.53 ± 0.063	0.03, 0.07	< 0.001
GCIPLV 6mm Circle	2.01 ± 0.127	1.89 ± 0.146	0.07, 0.17	< 0.001
INLV 1mm Circle	0.03 ± 0.004	0.02 ± 0.005	0.00, 0.00	0.157
INLV 3mm Circle	0.30 ± 0.015	0.28 ± 0.021	0.01, 0.02	< 0.001
INLV 6mm Circle	1.01 ± 0.052	0.97 ± 0.071	0.02, 0.06	< 0.001
OPLV 1mm Circle	0.01 ± 0.003	0.01 ± 0.004	0.00, 0.00	0.944
OPLV 3mm Circle	0.19 ± 0.025	0.20 ± 0.039	-0.02, 0.01	0.271
OPLV 6mm Circle	0.64 ± 0.067	0.66 ± 0.116	-0.05, 0.02	0.320
ONLV 1mm Circle	0.08 ± 0.008	0.08 ± 0.011	0.00, 0.00	0.647
ONLV 3mm Circle	0.58 ± 0.055	0.56 ± 0.054	0.00, 0.04	0.014
ONLV 6mm Circle	2.03 ± 0.145	1.97 ± 0.130	0.02, 0.11	0.010
PRV 1mm Circle	0.04 ± 0.003	0.04 ± 0.004	0.00, 0.00	0.876
PRV 3mm Circle	0.28 ± 0.030	0.29 ± 0.033	-0.02, 0.00	0.227
PRV 6mm Circle	1.13 ± 0.086	1.15 ± 0.147	-0.06, 0.03	0.445

Data is expressed as mean and standard deviation. 95% CI: 95% confidence interval of the mean difference between both groups. P is significant when < 0.05.



Mean thickness of inner retinal layers; retinal nerve fiber layer (RNFL), ganglion cell inner plexiform layer (GCIPL), inner nuclear layer (INL) in normal and schizophrenic subjects; Healthy Control on left side, Schizophrenic patients in the middle and P values on right side.

Conclusion

Retinal changes in schizophrenic patients detected by OCT and mf-ERG can be a new trait and a potential biomarker for early detection or diagnosis of schizophrenia.

- ❖ A highly significant statistically significant difference is found in latency and amplitude mf-ERG between cases and control in the 4 retinal quadrants in both eyes (p < 0.001).
- ❖ Similar difference is found when comparing the retinal nerve fiber layer thickness in the 4 excluding the fovea.
- ❖ All symptoms had significant association with latency, amplitude, RNFL thickness.
- ❖ Disease duration has no significant relation with any retinal layers except for the RNFL thickness in inferior temporal quadrant (rs0.462, 95% CI 0.1, 0.622, p 0.002).
- ❖ Linear regression analysis was conducted for retinal changes against disease duration and symptoms. Delusions appear the most consistent predictor of retinal changes.

Results

Table 1 showing mfERG results

	Normal (n= 64)	Schizophrenia (n= 67)	95% CI	P
Amplitude				
Superior Nasal	29.02 ± 3.591	8.68 ± 4.894	18.9, 21.8	< 0.001
Superior Temporal	26.43 ± 4.641	10.95 ± 5.426	13.7, 17.2	< 0.001
Inferior Temporal	27.46 ± 4.175	12.95 ± 5.520	12.8, 16.2	< 0.001
Inferior Nasal	24.74 ± 5.195	6.95 ± 3.569	16.2, 19.3	< 0.001
Latency				
Superior Nasal	50.09 ± 0.924	43.52 ± 5.307	5.2, 7.9	< 0.001
Superior Temporal	50.40 ± 1.396	43.51 ± 3.531	6.0, 7.8	< 0.001
Inferior Temporal	50.42 ± 1.249	43.29 ± 6.035	5.6, 8.6	< 0.001
Inferior Nasal	50.03 ± 1.112	44.74 ± 5.074	4.0, 6.6	< 0.001

Data is expressed as mean and standard deviation. 95% CI: 95% confidence interval of the mean difference between both groups. P is significant when < 0.05.