

Eye stroke protocol in the emergency department

AUTHORS: B  nard-S  guin   , Nahab F, Pendley AM, Rodriguez Duran M, Torres Soto M, Keadey M, Wright DW, Newman NJ, Biousse V.

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STUDY PURPOSE

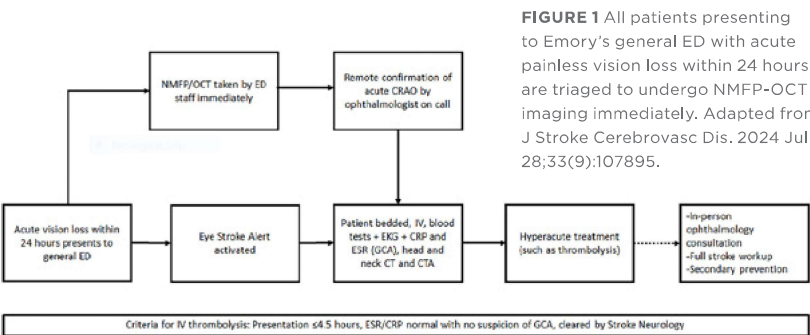
To evaluate the use of non-mydriatic fundus photographs (NMFP) combined with OCT to facilitate ultra-rapid remote diagnosis and stroke alert for patients with acute vision loss presenting to the emergency department (ED)

OVERVIEW

 STUDY DESIGN	 STUDY DEVICE(S)	 # OF EYES/PATIENTS	 OUTCOME MEASURES
Prospective evaluation of all central and branch retinal artery occlusions (CRAO and BRAO) between 06/06/2023-06/06/2024 who had NMFP-OCT imaging in Emory University's general ED affiliated with a stroke center	Maestro2 NMFP-OCT (Topcon, Japan)	26 patients diagnosed with retinal artery occlusions (22 CRAOs and 4 BRAOs) in ED	Time between vision loss onset and presentation to ED, time and results of ocular imaging, quality of ocular imaging, and number of patients undergoing thrombolysis treatment

RESULTS

- Five patients presented to ED within 4.5 hours of vision loss onset, six presented between 4.5 and 12 hours and 15 presented after 12 hours of symptom onset. On average, NMFP-OCT was performed within 141 minutes of presentation to ED (range 27-422 minutes)
- Of the nine patients who underwent NMFP-OCT imaging within 12 hours of symptom onset, 5 had subtle retinal whitening on color photographs consistent with acute ischemia but all showed inner retinal hyperreflectivity/edema on OCT
- Quality of color fundus photographs and OCT was good with average scores of 3.3/5 and 4.2/5, enabling diagnosis of acute CRAO or BRAO from 19 of 26 non-mydriatic color fundus photographs and 25 of 26 OCT images
- Diagnosis of acute RAO was made remotely with NMFP-OCT within 4.5 hours in 4 patients, 2 of whom received intravenous thrombolysis. All patients underwent a complete stroke workup while in the ED and were discharged home with appropriate secondary prevention of stroke (Figure 1)



CONCLUSIONS

- Implementation of Maestro NMFP-OCT in a general ED enables rapid remote diagnosis of retinal artery occlusions and facilitates initiation of an eye stroke protocol in acute patients before in-person ophthalmology consultation is performed
- OCT complements color fundus photography and provides greater diagnostic accuracy in hyperacute cases with near-normal appearing ocular fundi

Retinal and Choroidal Changes in Patients with Parkinson’s Disease Detected by Swept-Source Optical Coherence Tomography

AUTHORS: Satue M, Obis J, Alarcia R, Orduna E, Rodrigo MJ, Vilades E, Gracia H, Otin S, Fuertes MI, Polo V, Larrosa JM, Pablo LE, Garcia-Martin E.

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STUDY PURPOSE

To evaluate the retinal and choroidal thickness in patients with Parkinson’s Disease (PD) using SS-OCT technology.

OVERVIEW

 STUDY DESIGN	 STUDY DEVICE(S)	 # OF EYES/PATIENTS	 OUTCOME MEASURES
Observational, cross-sectional study	• DRI Triton SS-OCT (Topcon, Tokyo, Japan)	• Fifty eyes of 50 patients and 54 eyes of 54 healthy individuals.	• Macular (EDTRS, GCL+ and GCL++) and peripapillary (RNFL, GCL+, and GCL++) thickness. Choroidal thickness for both the macular (EDTRS) and peripapillary area (TSNIT).

RESULTS

- Full macular thickness measurements from the ETDRS protocol showed no significant differences between patients with PD and healthy subjects.
- GCL+ provided by the TSNIT macular area scan demonstrated significant lower values in the PD patients than healthy individuals in the superonasal (73.09µm in controls vs. 68.72µm, p=0.032), inferonasal (72.23 vs 68.72µm p=0.018) and inferior (68.14 vs. 64.77µm, p=0.021) sectors of the macular area.
- GCL++ showed significantly lower thicknesses in the inferonasal (120.04 vs 114.93µm, p=0.030) and inferior (107.76 vs. 102.29µm, p=0.013).
- Macular choroidal thickness was augmented especially in the inner nasal (205.27 vs. 250.23µm, p=0.015), inner inferior (213.34 vs. 252.86µm, , p=0.030), outer nasal (163.21 vs. 208.01 µm, p=0.012) and outer inferior (200.65 vs. 233.25 µm, p=0.049) ETDRS areas.
- Peripapillary choroidal thickness was found to be significantly augmented in PD patients in total thickness (125.20 vs. 152.85 µm, p = 0.011), the nasal (129.52 vs. 153.13 µm, p = 0.025), inferior (98.87 vs. 130.00 µm, p = 0.007), and temporal (128.12 vs.165.23 µm, p = 0.003) quadrants, and nasal (129.00 vs. 152.15 µm, p = 0.025), inferotemporal (94.55 vs. 131.45 µm, p = 0.003), inferonasal (99.86 vs. 126.85 µm, p = 0.016), and temporal (128.12 vs. 165.23 µm,p = 0.003) sectors, compared to controls.
- The rest of the peripapillary choroidal measurements demonstrated a tendency toward choroidal thickening in all areas.

CONCLUSIONS

- Patients presented a significant reduction of the GCL in the nasal and inferior sectors of the macular area, retinal thinning in the peripapillary areas especially affecting the temporal and superotemptral sectors; RNFL and GCL++ loss was observed in the inferotemporal sector.