Evaluation of capillary perfusion level of the Optic Nerve Head in Glaucomatous Optic Neuropathy - structure/function correlation: case reports

Tiago Carvalho[1,2]; Nádia Fernandes[2,3]

[1]Resident Orthoptist at Hospital Lusíadas Lisboa, Portugal; [2]Resident Orthoptist at the Topcare Clinic, Oeiras, Portugal; [3]Assistant Professor in Orthoptics at Escola Superior de Tecnologia da Saúde de Lisboa (ESTeSL), Instituto Politécnico de Lisboa, Lisboa, Portugal

BACKGROUND

Glaucoma is a complex optic neuropathy characterized by a progressive loss of ganglion cells complex (GCC) and nerve fiber layer and consequently visual function loss. Although evaluation of glaucomatous structural damage in the optic nerve head (ONH) is fundamental to the diagnosis and management of glaucoma. Some researchers have suggested that vascular dysfunction plays an important role in the pathology of glaucoma. However, due to the limits of technology, there are few reports that have studied microcirculation in glaucoma. Several methods have been used to measure optic nerve head (ONH) perfusion in Glaucoma, many focusing on the peripapillary capillaries.

PRIMARY OPEN-ANGLE GLAUCOMA

- ✓ Female, 63 years;
- ✓ Diagnosis in 2021 (taking prophylaxis with Xalacom®);
- ✓ Intraocular pressure (applanation): 12mmHg (RE and LE);
- ✓ Fundoscopy: Cup to disc ratio RE 0.6 / LE 0.7; temporal rim optic disc of the left eye sallow.

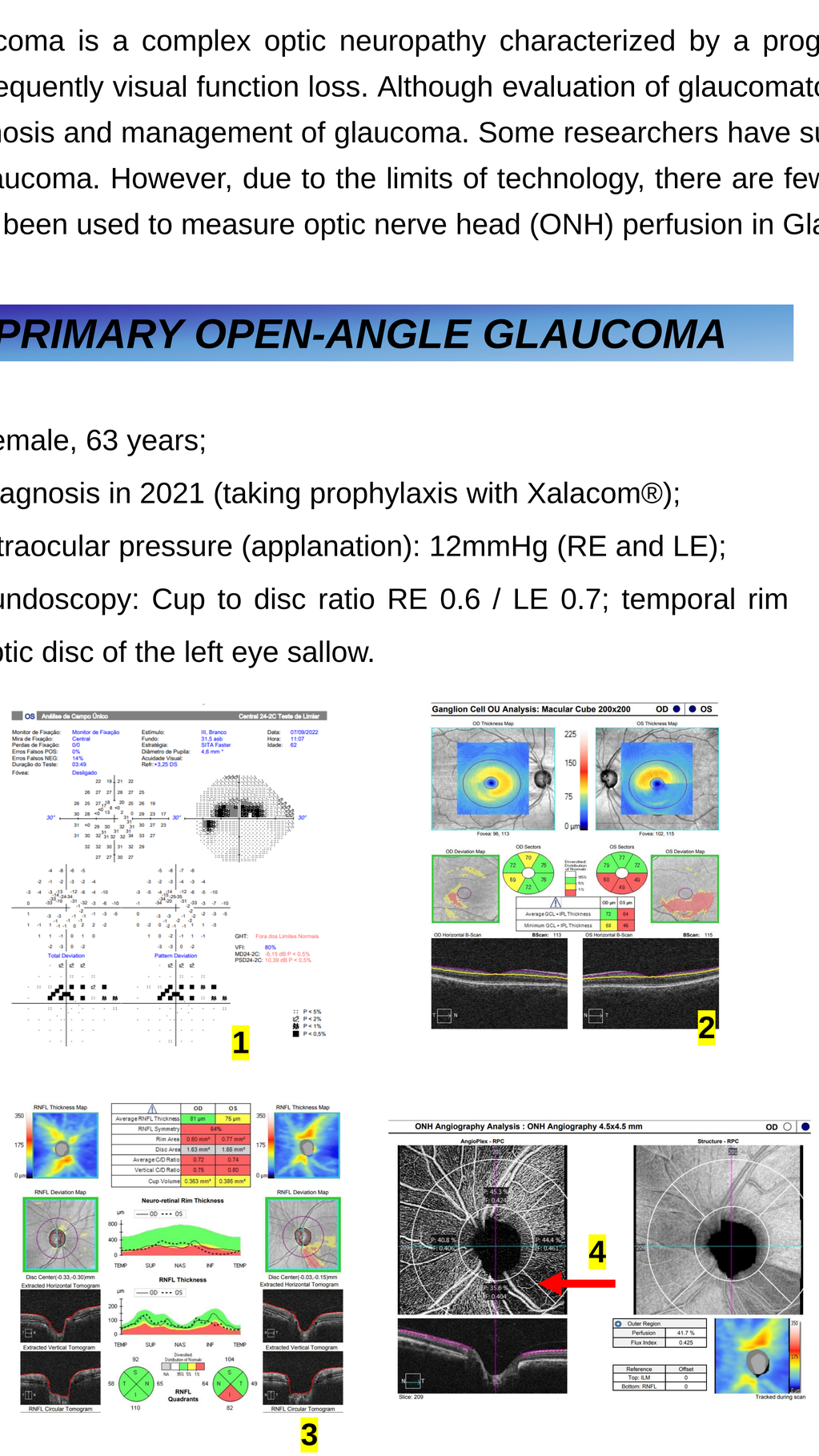

Figure 1 – Ophtalmologic complementar exams in the left eye

Ophtalmologic complementar exams findings (LEFT EYE):

1 – Visual field left eye with the superior temporal arciform scotoma (bjerrum área);

2 – Ganglion Cell Complex greatly reduced throughout the lower sector (average 64µm);

3 – ONH and RNFL analysis reduced in inferior quadrant (the same in RNFL clock hours) ;

4 – ONH Angiography Analysis: decreased level of capillary perfusion (36.3%) in the inferior temporal quadrant (red arrow).

GLAUCOMA SUSPECT

- ✓ Female, 45 years;
- ✓ Routine appointment;
- ✓ Intraocular pressure (applanation): 17mmHg in RE and 14mmHg in LE);
- ✓ Fundoscopy: optic discs suspect!
- ✓ CCT RE 544µm and LE 542µm;

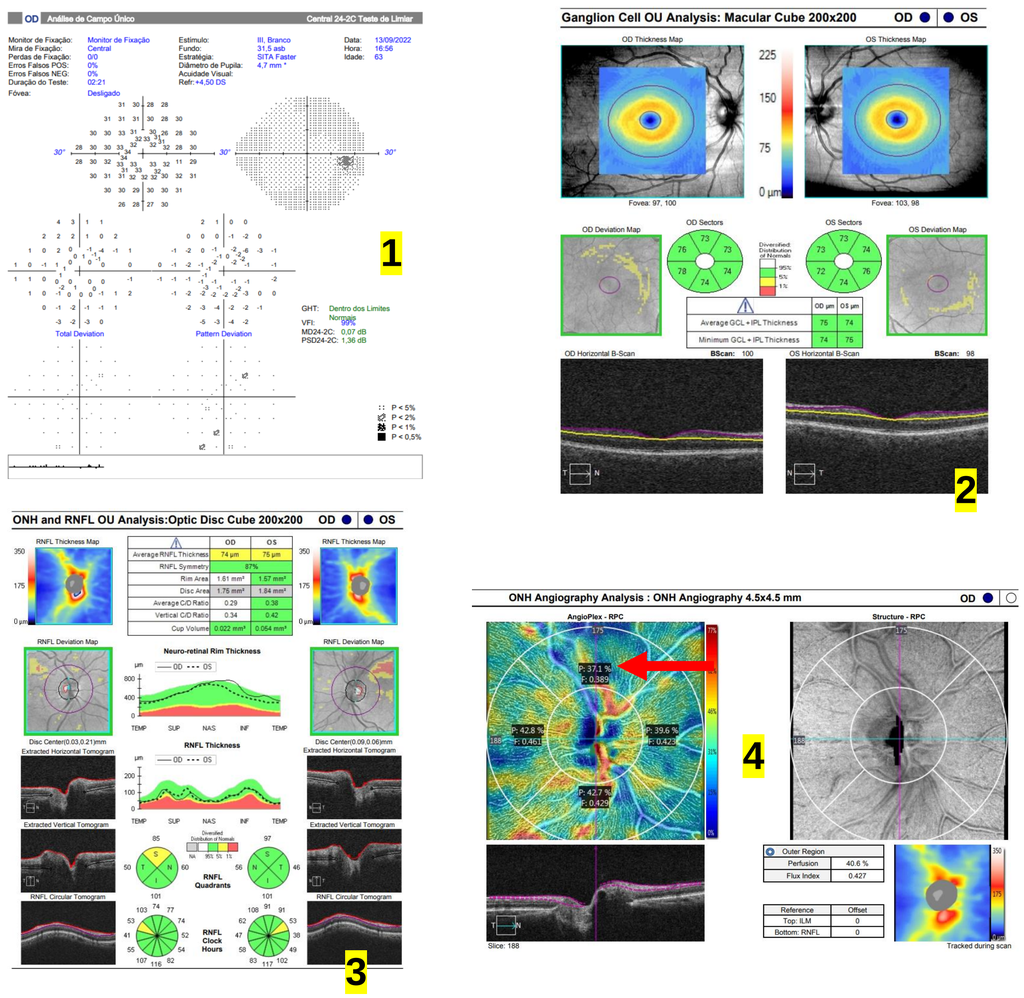

Figure 2 – Ophtalmologic complementar exams in the right eye

Ophtalmologic complementar exams findings (RIGHT EYE):

1 – Visual field right eye with the GHT within the values of the normative database;

2 – Ganglion Cell Complex no major changes;

3 – ONH and RNFL analysis borderline in superior quadrante;

4 – ONH Angiography Analysis: decreased level of capillary perfusion (37.1%) in the superior quadrant (red arrow).

CONCLUSIONS

The assessment of capillary perfusion in OCT-A measurements in the optic nerve head may provide important data in monitoring patients with glaucoma, ocular hypertension and glaucoma suspect, as well as determining that a decrease in perfusion in a certain quadrant may be indicative of a loss of peripapillary RFNL in the same quadrant and consequent visual field change (structure-function relationship). Therefore, many studies are being developed on this topic, but it is possible to state that OCT-A at ONH could be considered one of the gold standard exams for this type of patient.

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