Sequential non-arteritic anterior ischemic optic neuropathy (NAION)

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A 68 year old white woman had a new onset of floaters in her right eye and was found to have right optic disc edema. One month later she had acute onset of blurry vision in the right eye

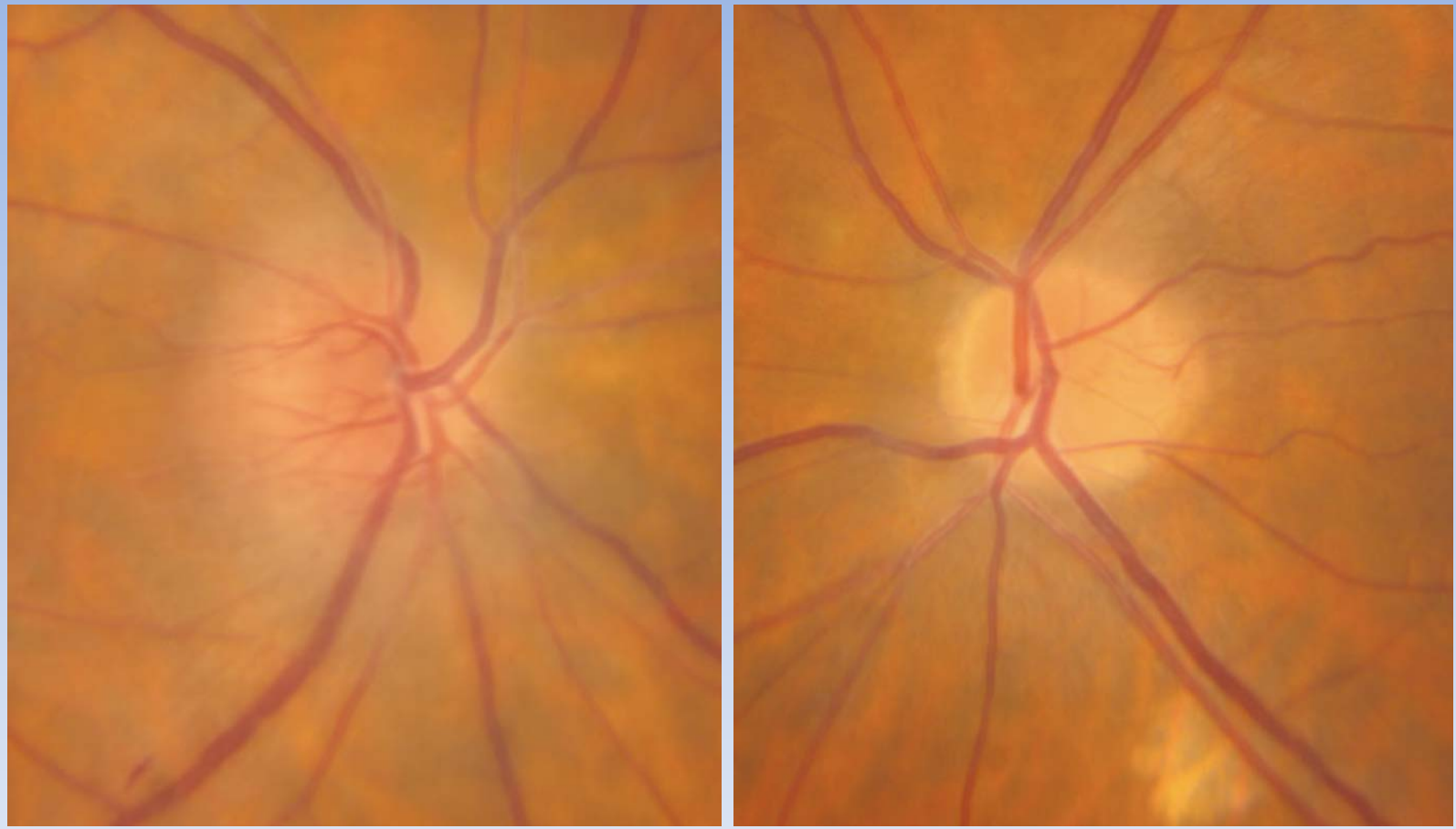
She has a history of hypertension, obstructive sleep apnea, and obesity

Visual acuity is 20/30 OD, 20/20 OS

There is a right 0.9 log unit relative afferent pupillary defect

Color vision is 11/14 OD, 14/14 OS correct Ishihara plates

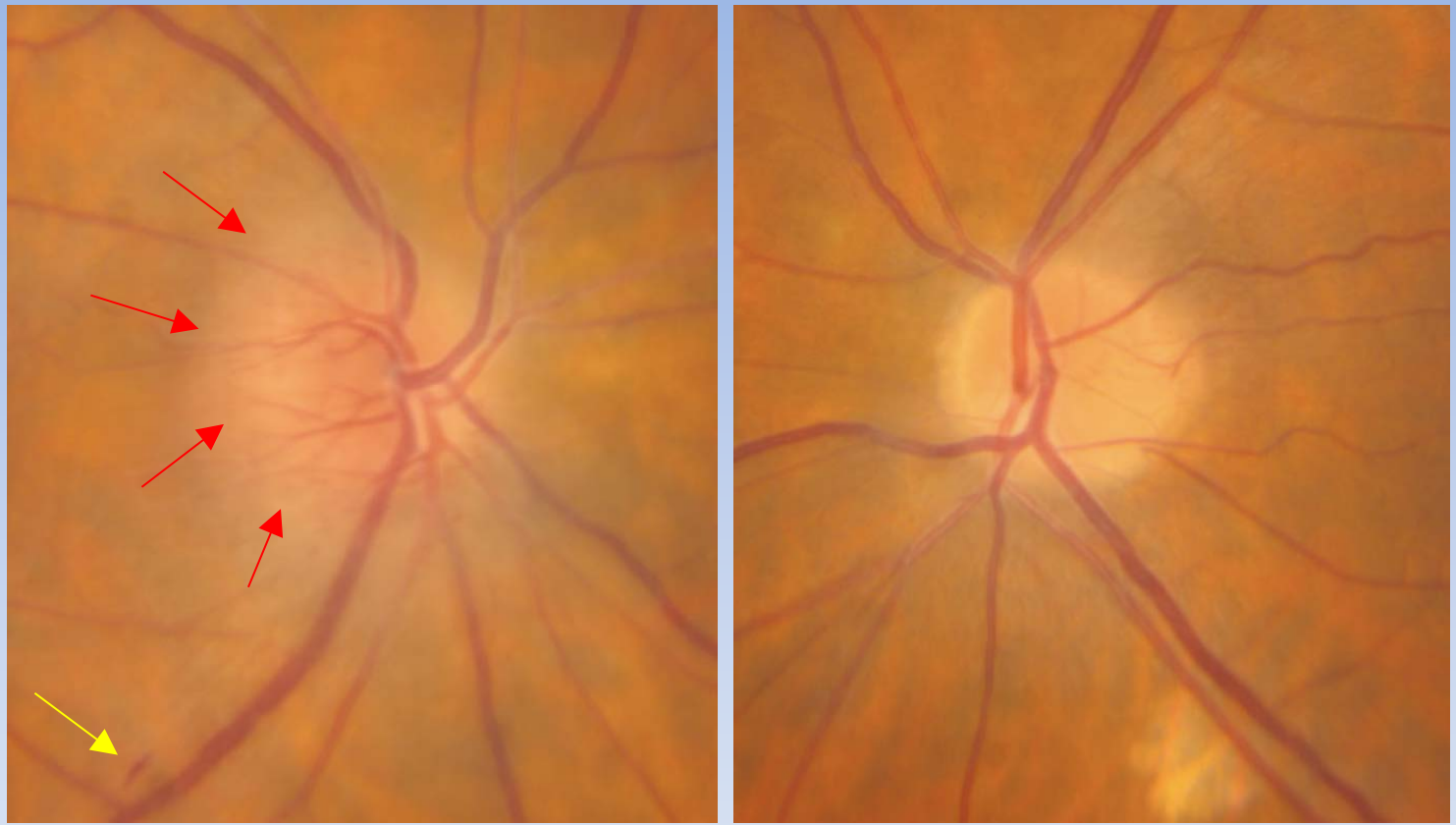
Figure 1.



Right eye

Left eye

Figure 1.

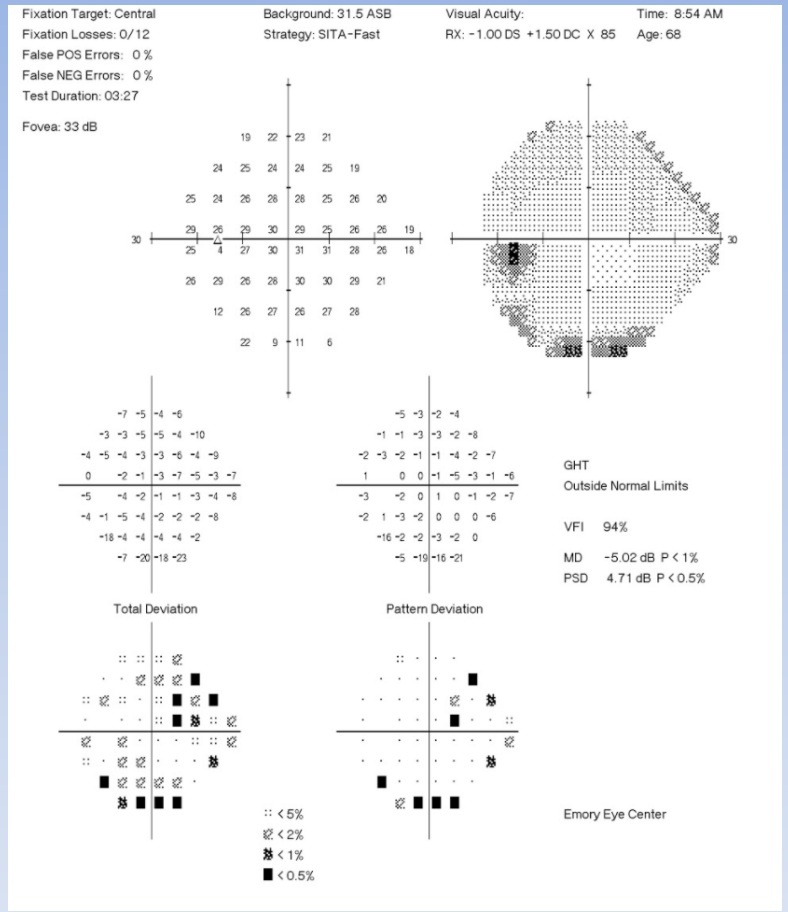


Right eye

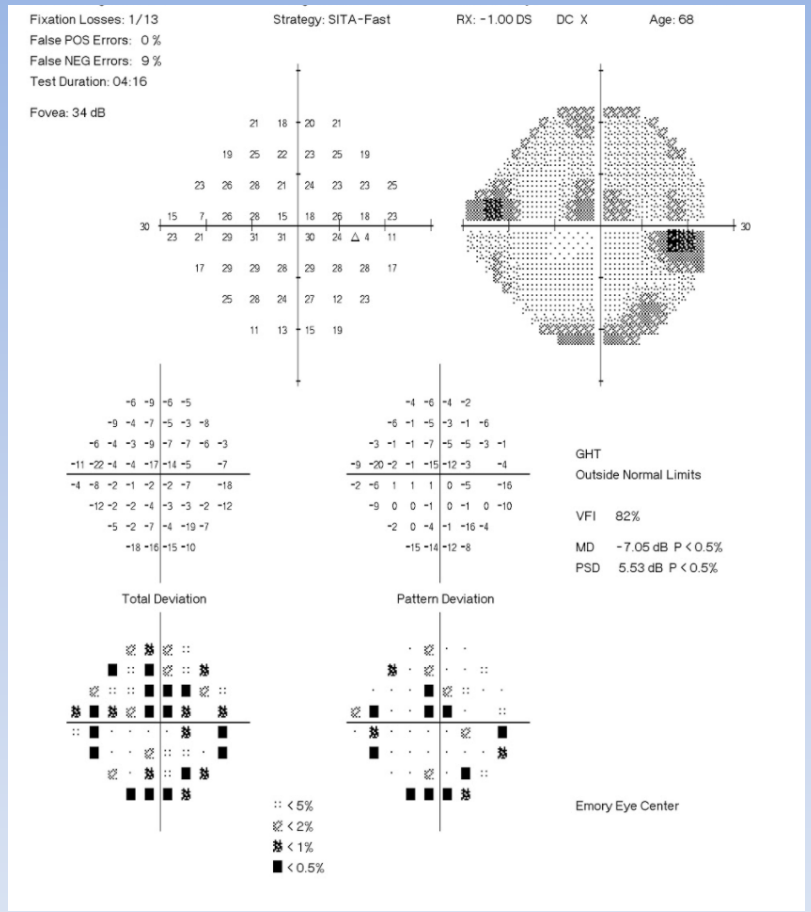
Left eye

There is right optic disc edema (red arrows) and a hemorrhage (yellow arrow). The left eye is a small, crowded optic disc without an obvious cup (a disc-at-risk)

Figure 2.



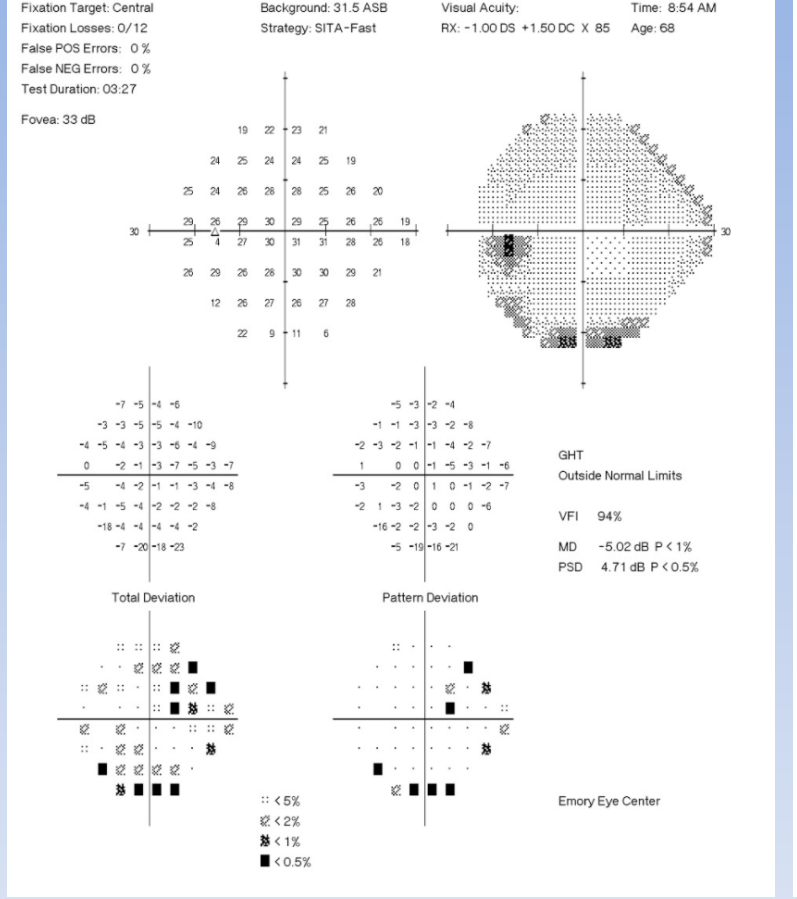
Right eye



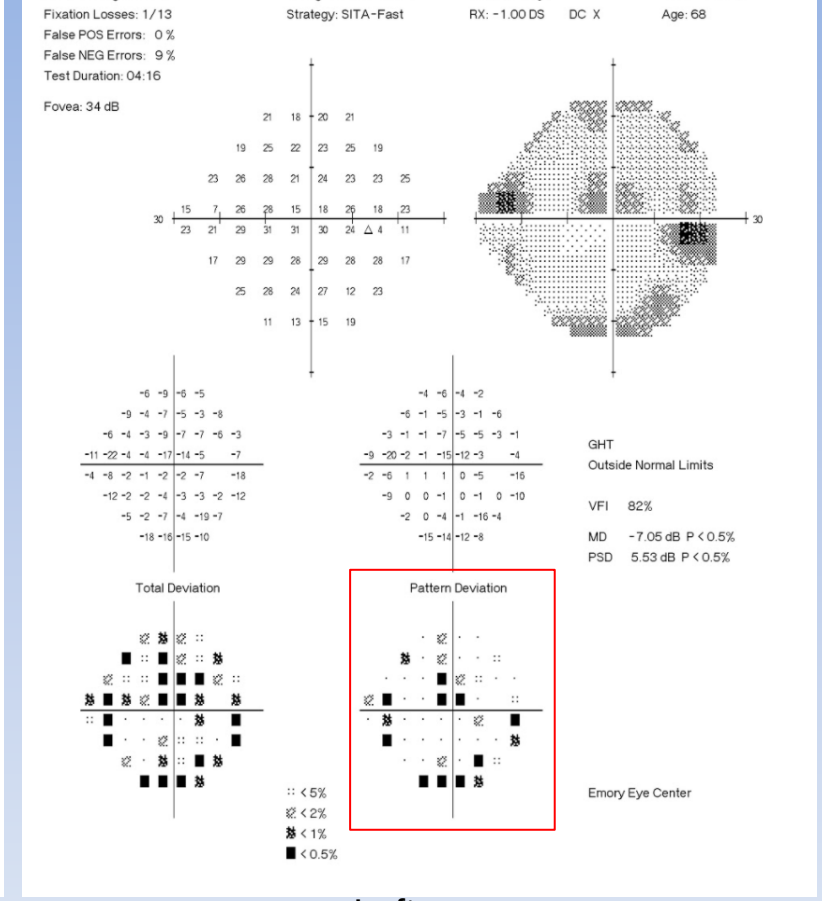
Left eye

24-2 SITA-Fast Humphrey visual fields

Figure 2.



Right eye



Left eye

There are points of depression in the right eye both above and below the horizontal (red box); the left eye changes are related to the poor reliability of the test

A careful history did not reveal any systemic symptoms of giant cell arteritis

Laboratory investigations were normal:

- ESR 25 mm/hr (normal is [age+10 divided by 2] for women)
- CRP 9.4 mg/L (normal less than 10)
- Platelets 363 (normal 150 - 400)

A diagnosis of right non-arteritic anterior ischemic optic neuropathy (NAION) was made based on the typical clinical presentation. The patient has vascular risk factors (hypertension, obstructive sleep apnea, obesity), and no clinical or laboratory evidence of giant cell arteritis

She lost vision in her left eye (fellow eye) 2 weeks later and was seen in follow-up the following day

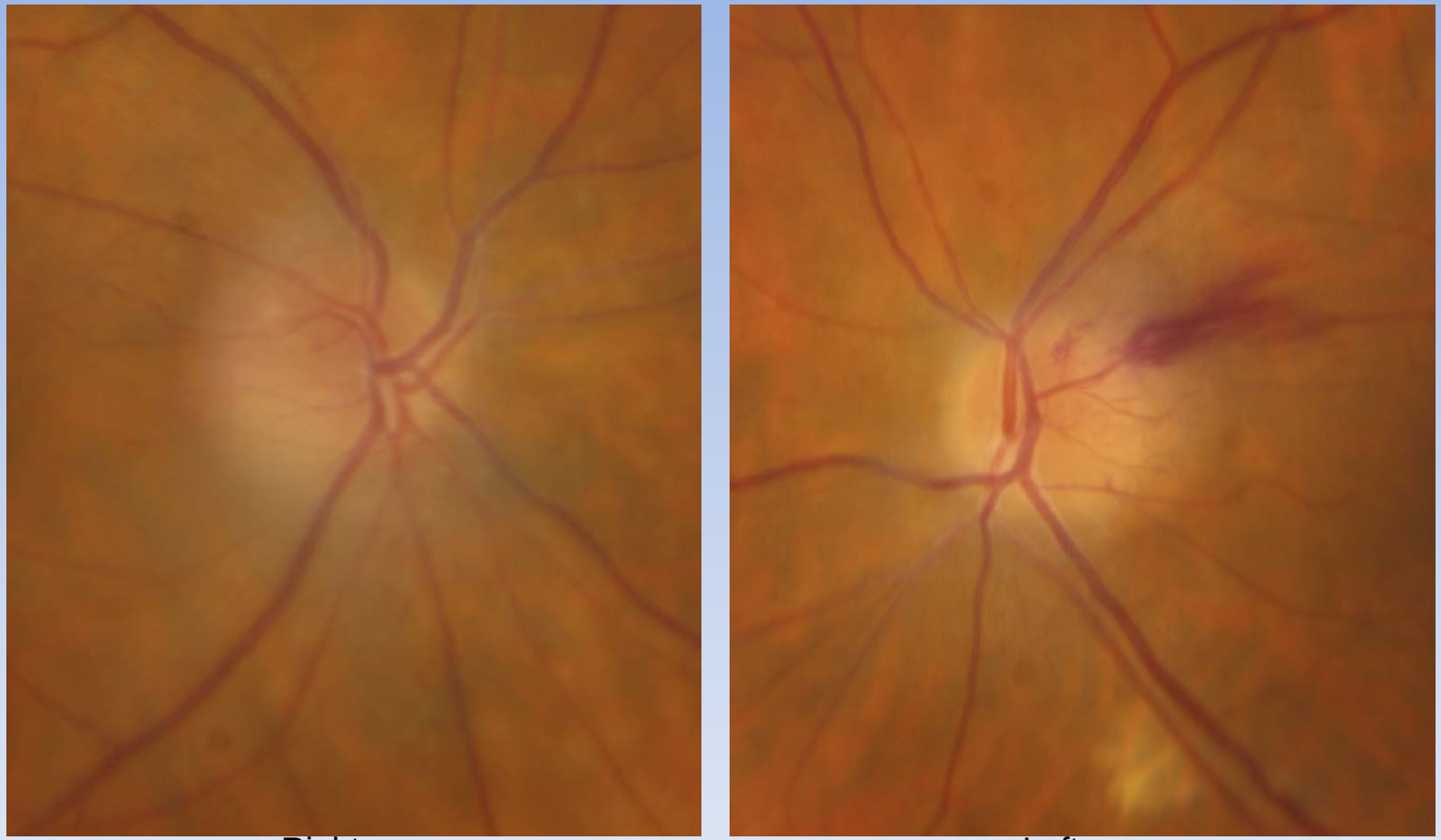
Visual acuity is 20/20 OD, 20/60 OS

There was no relative afferent pupillary defect*

Color vision is 11/14 OD, 12/14 OS correct Ishihara plates

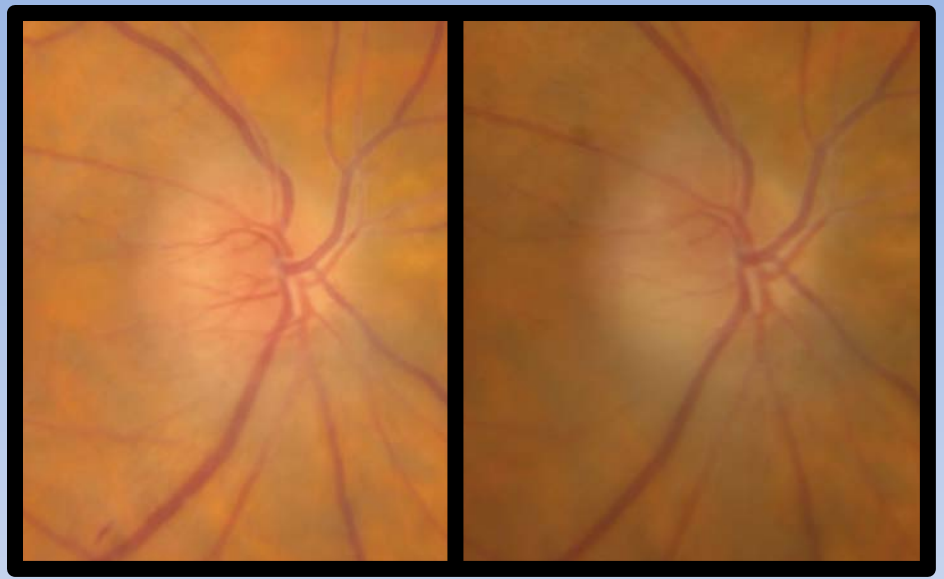
*The relative afferent pupillary is not detected at that visit because she now has bilateral optic neuropathies

Figure 3.



Right eye

Left eye



Initial visit

Current visit
(2 weeks later)

There has been interval improvement in the optic disc edema in the right eye

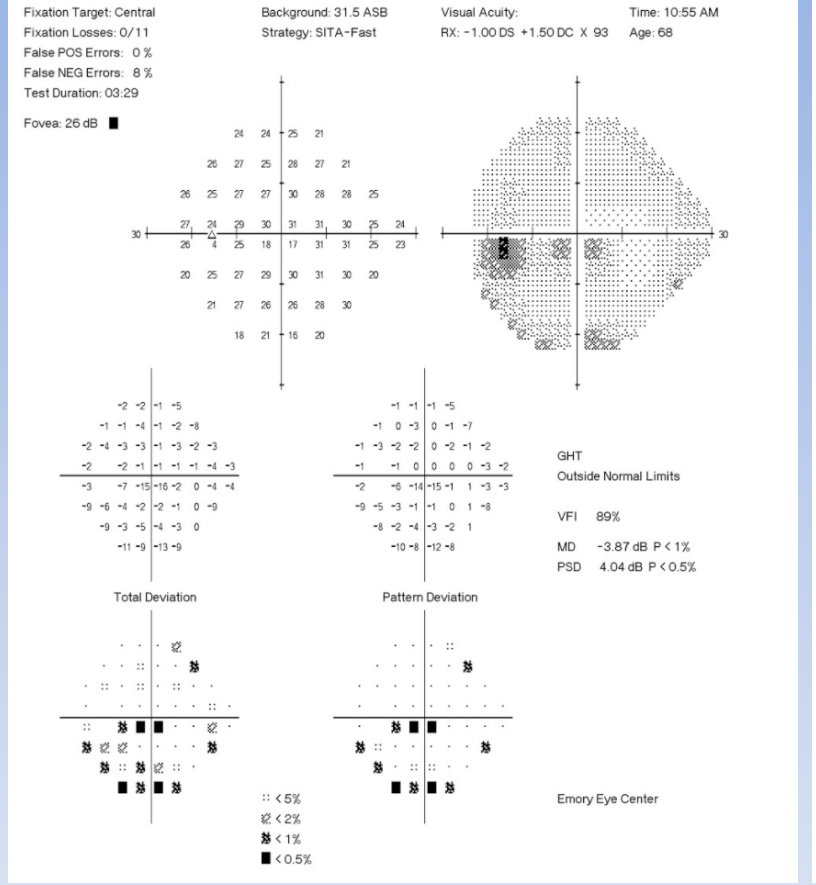
Initial visit

Current visit
(2 weeks later)

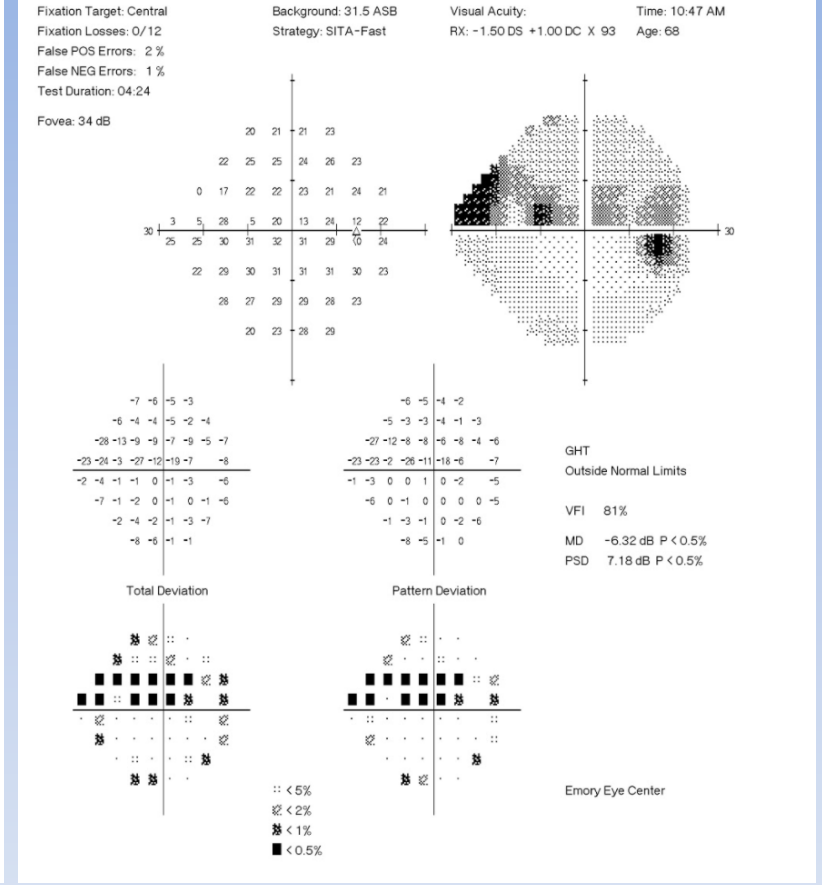
There is new optic disc edema in the left eye with nerve fiber layer hemorrhages (red arrows)

Figure 4.

Figure 5.



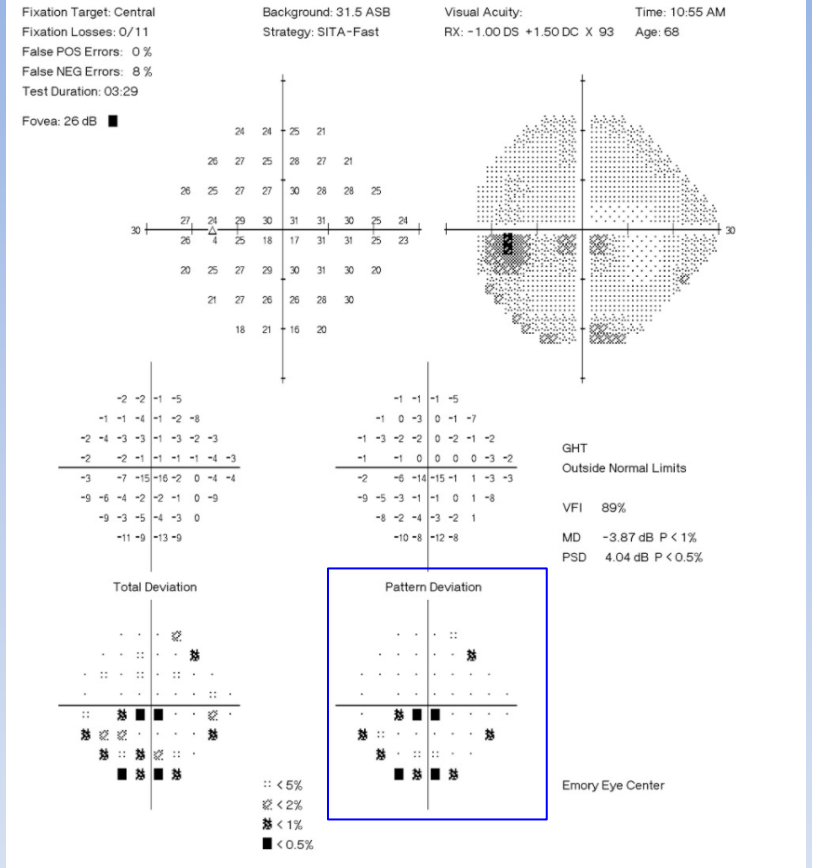
Left eye

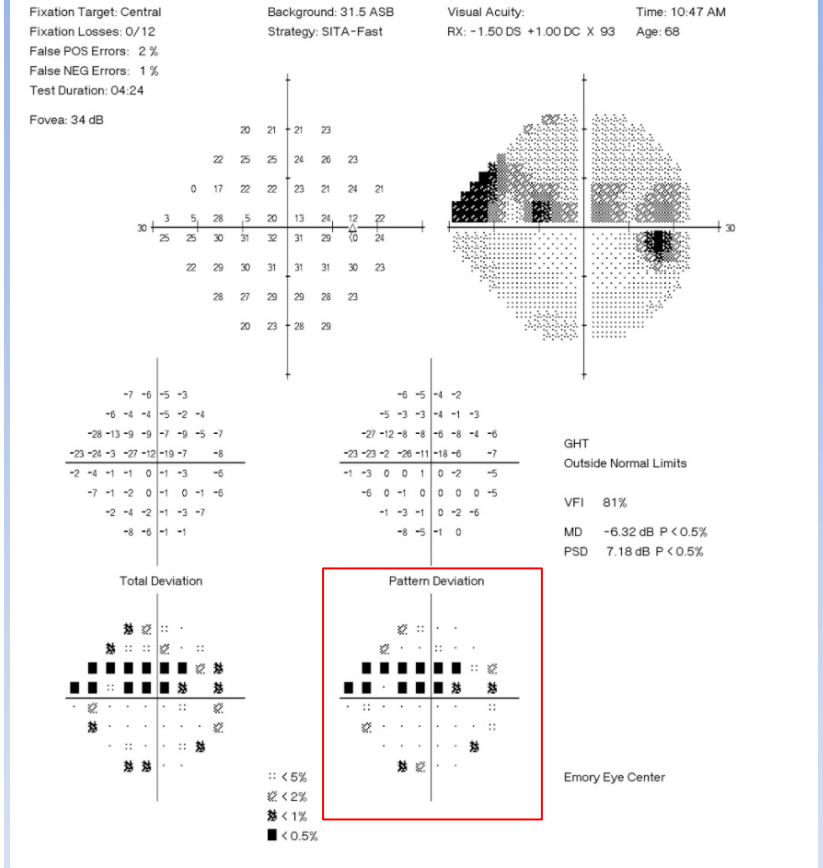


Right eye

24-2 SITA-Fast Humphrey visual fields

Figure 5.





Left eye

Right eye

There is a right superior altitudinal defect (red box) and inferior points of depression in the left eye (blue box)

She still does not have any systemic symptoms of giant cell arteritis

Repeat laboratory investigations were normal:

- ESR 20 mm/hr (normal is [age+10 divided by 2] for women)
- CRP 8.0 mg/L (normal less than 10)
- Platelets 372 (normal 150 - 400)

A diagnosis of sequential non-arteritic anterior ischemic optic neuropathy (NAION) in the setting of a disc-at-risk was made. Given her vascular risk factors and comorbidities, aspirin was recommended.

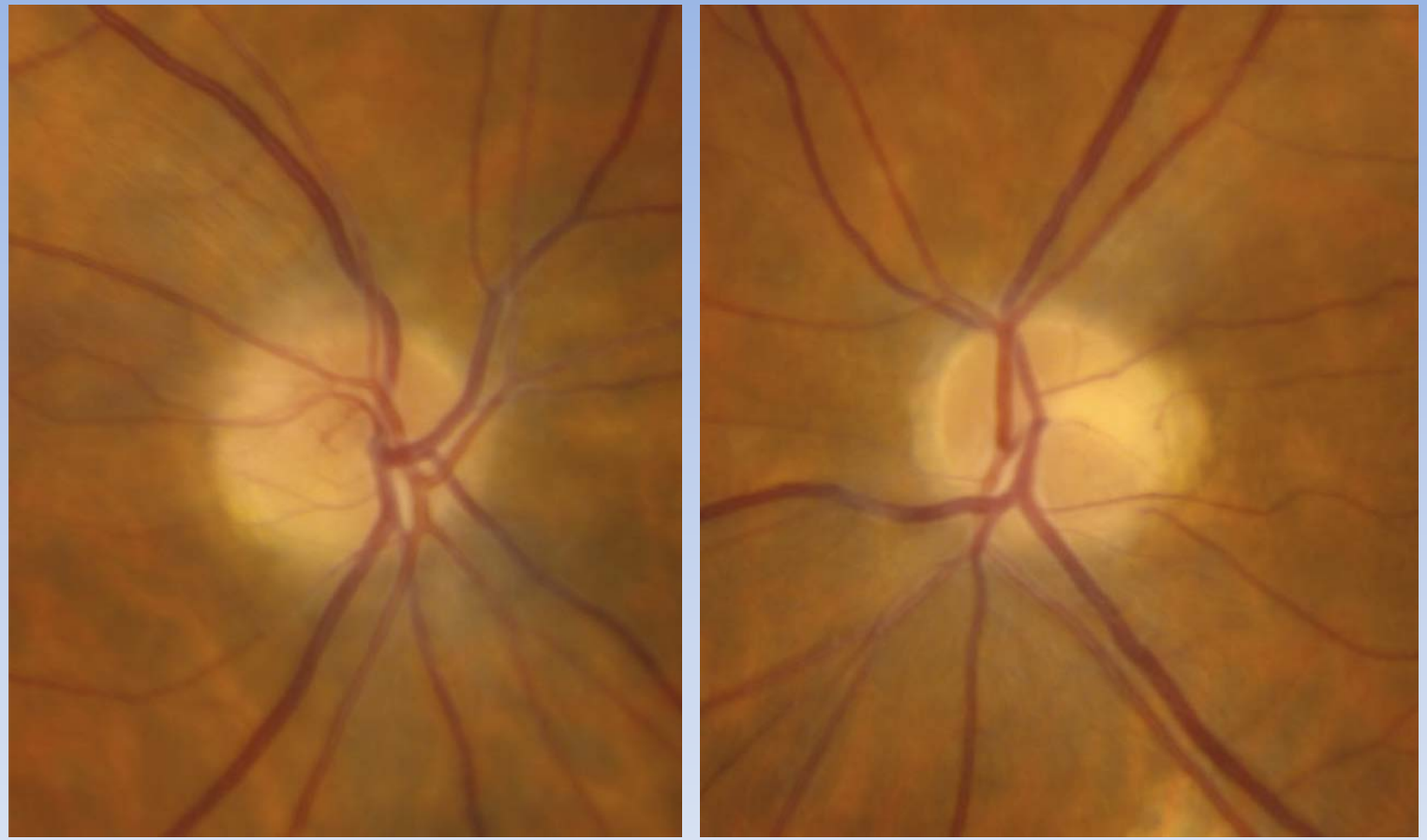
She was seen in follow-up 1 month later and feels she had some mild improvement in the right eye, but no change in the left eye

Visual acuity is 20/25 OD, 20/30 OS

There is no relative afferent pupillary defect

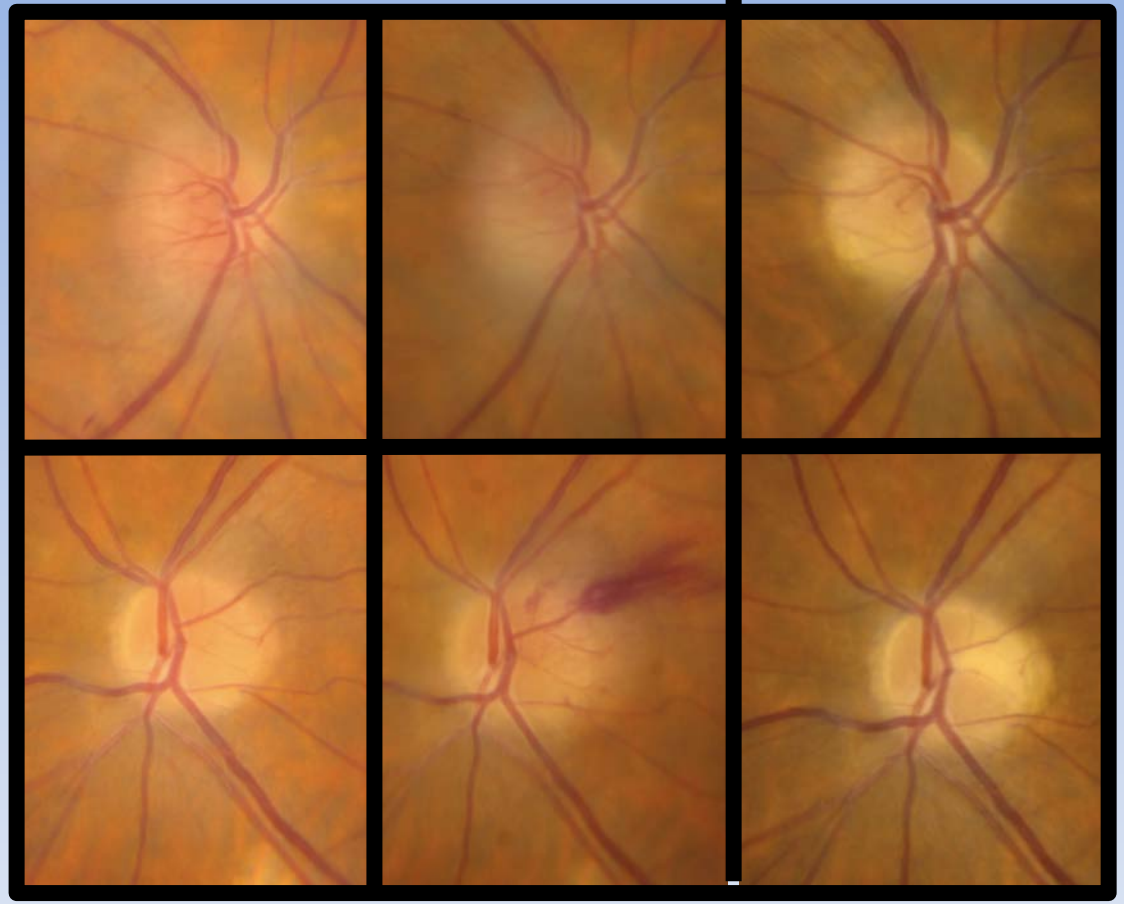
Color vision is 10/14 OD, 11/14 OS correct Ishihara plates

Figure 6.



Right eye

Left eye



Initial visit

Visit #2 (2 weeks after initial visit)

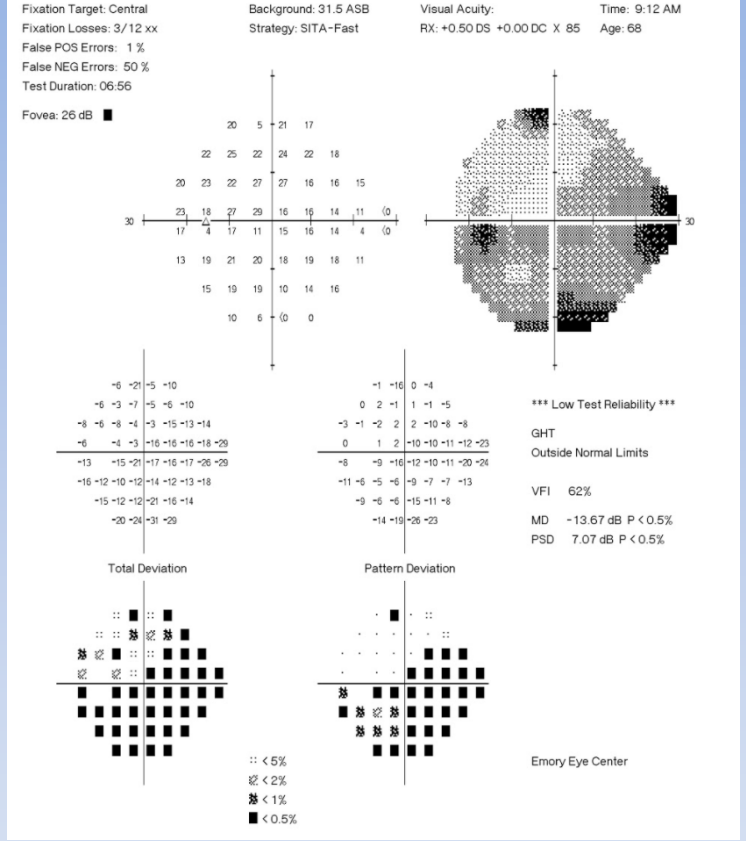
Visit #3 (6 weeks after initial visit)

There has been resolution of the disc edema in the right eye. The disc edema has been replaced by disc pallor

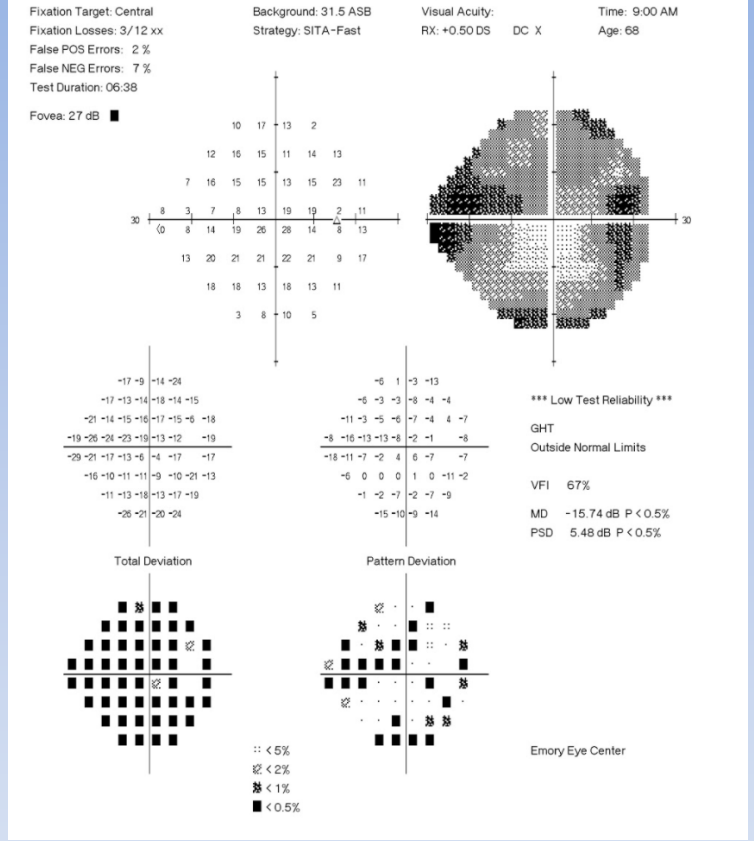
There has been resolution of the optic disc edema and the appearance of disc pallor

Figure 7.

Figure 8.



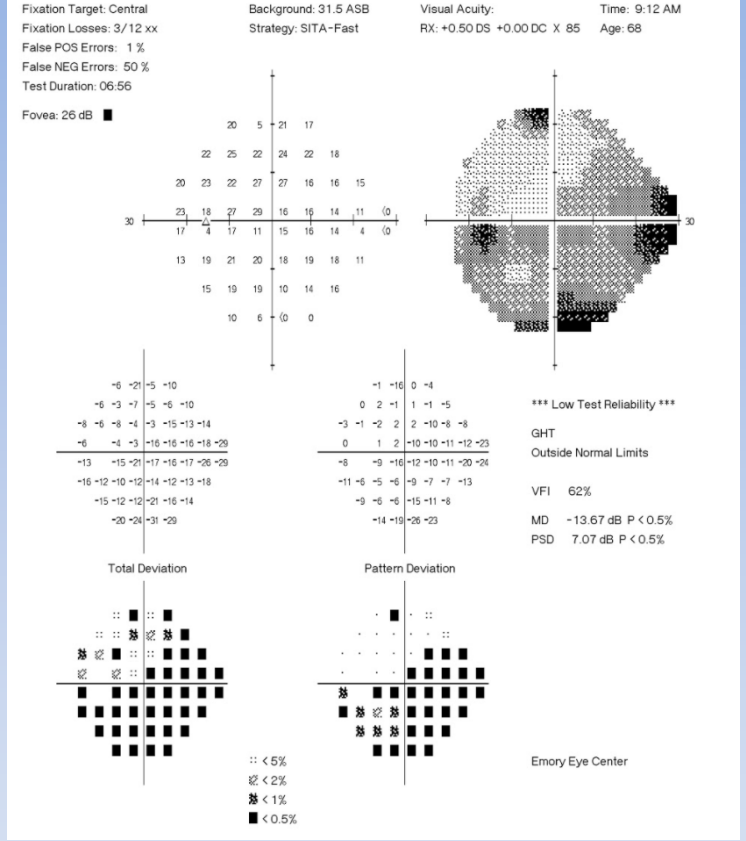
Left eye



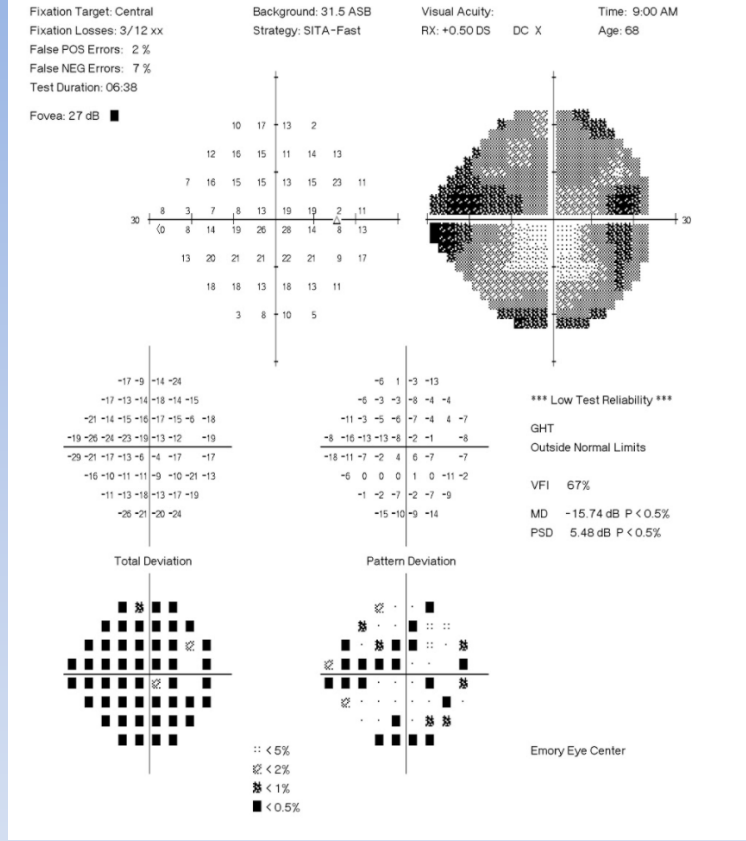
Right eye

24-2 SITA-Fast Humphrey visual fields

Figure 8.



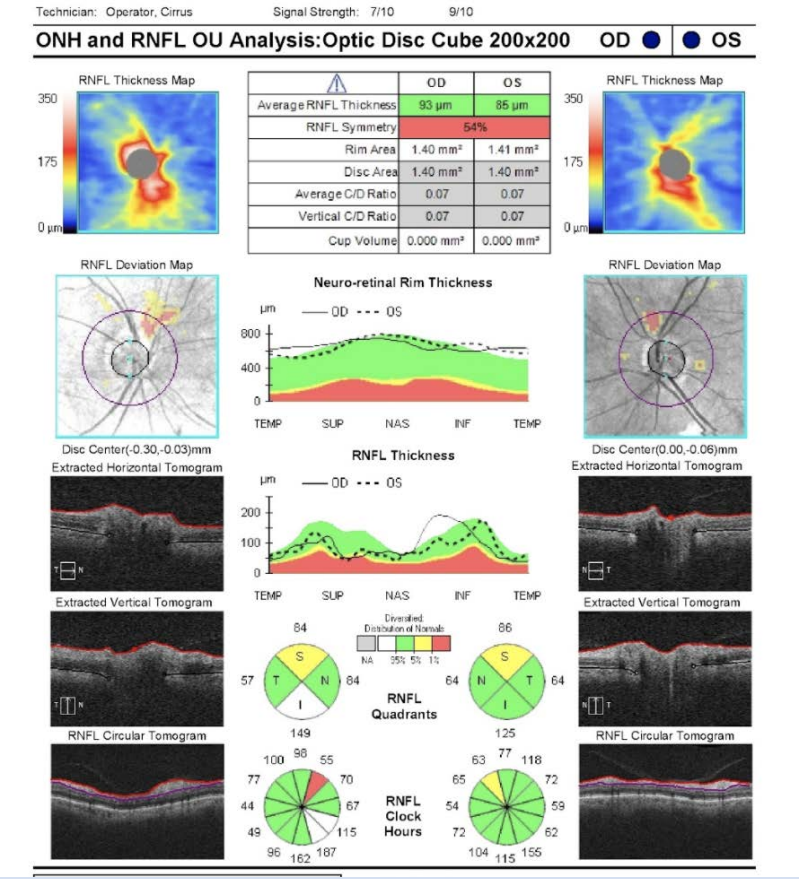
Left eye



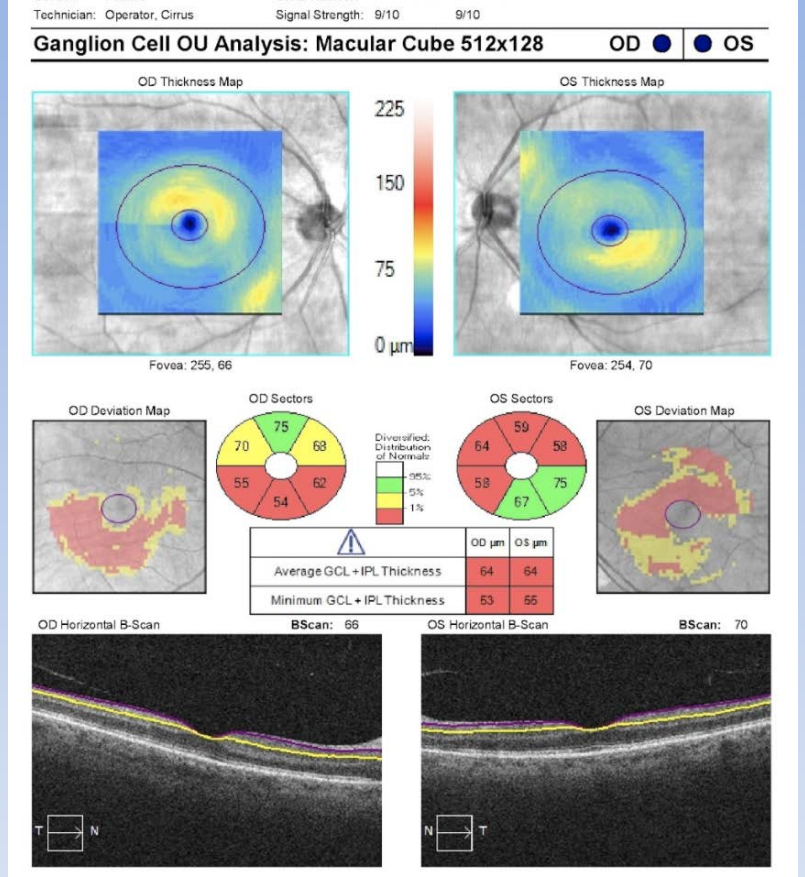
Right eye

Visual fields were unreliable due to high false negatives and fixation losses

Figure 9.

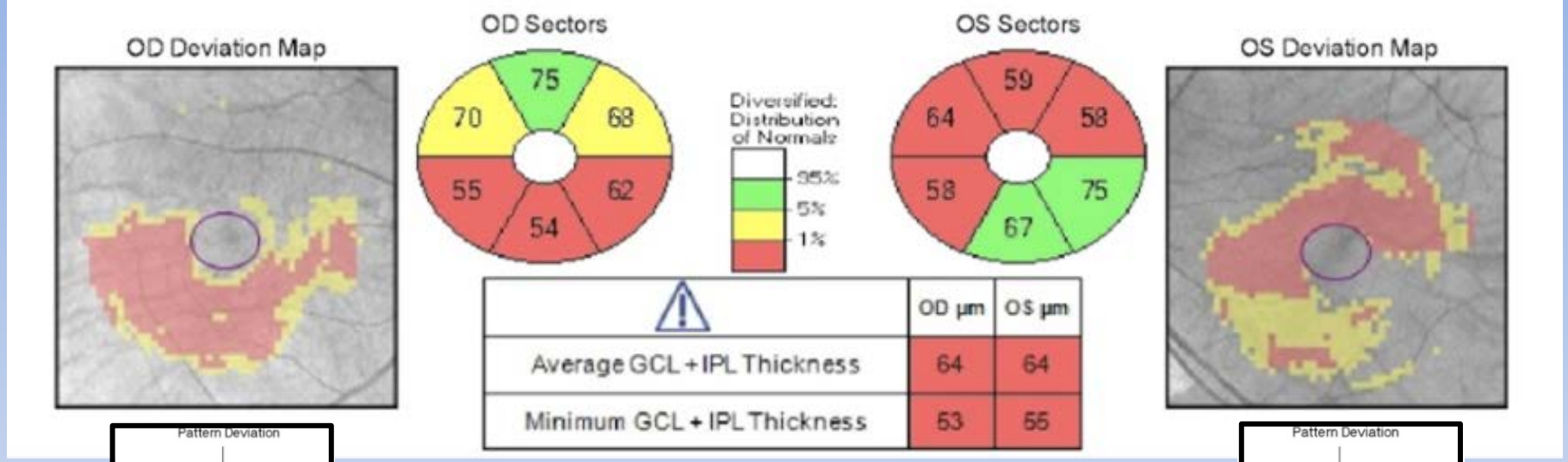


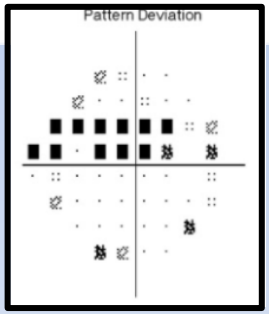
Retinal nerve fiber layer (RNFL) analysis



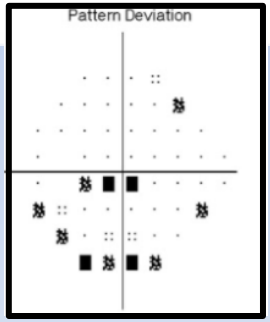
Ganglion cell complex (GCC) analysis

Optical coherence tomography (OCT) of the RNFL and GCC obtained at that followup visit
The RNFL thickness is within normal limits because there is mild residual disc edema (the residual disc edema masks the RNFL loss)





The ganglion cell complex analysis is not normal, consistent with bilateral optic neuropathies



There is inferior macular ganglion cell loss corresponding to the superior visual field defect in the right eye

There is superior>inferior macular ganglion cell loss corresponding to the inferior visual field defect in the left eye

Figure 10.

Summary points:

- The Ischemic Optic Neuropathy Decompression Trial (IONDT) found that NAION may become bilateral in about 15% of patients within 5 years[1]

- A history of diabetes or worse baseline vision (20/200 or worse) was significantly associated with fellow eye involvement in this study

[1]Newman NJ, Scherer R, Langenberg P, et al. The fellow eye in NAION: report from the ischemic optic neuropathy decompression trial follow-up study. Am J Ophthalmol 2002;134:317-28.