

Junctional scotoma from a sellar mass

Visual fields and OCT findings

Jonathan A. Micieli, MD

Valérie Biousse, MD

A 55 year old woman presents with gradual painless loss of peripheral vision for 1 year

She is healthy and does not take any medications

Visual acuity was 20/20 OD, 20/20 OS

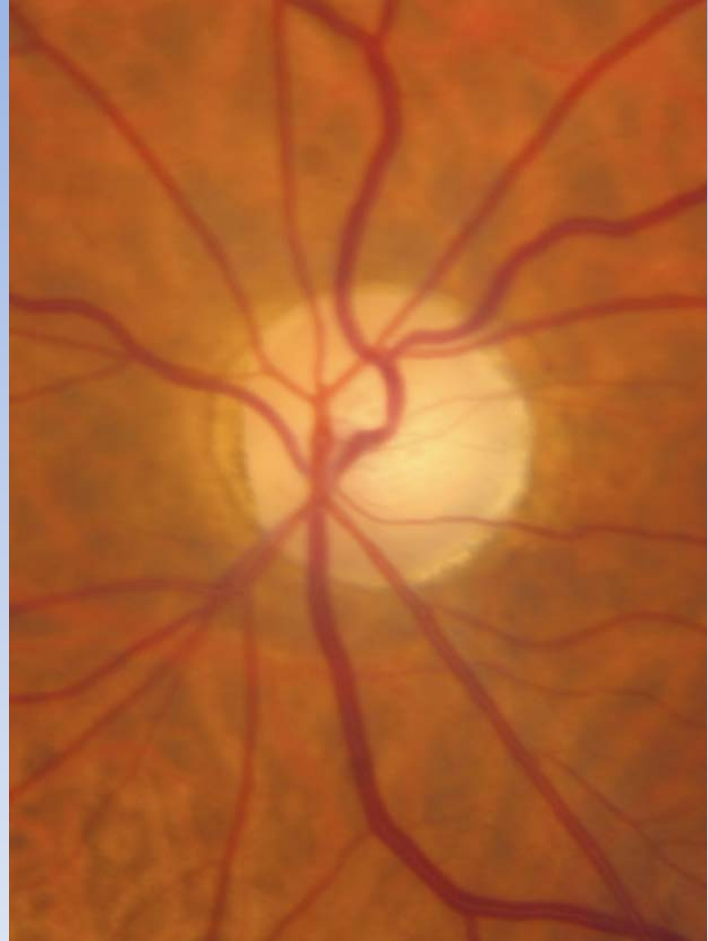
There was a small left relative afferent pupillary defect

She saw 14/14 correct Ishihara color plates in both eyes

Figure 1

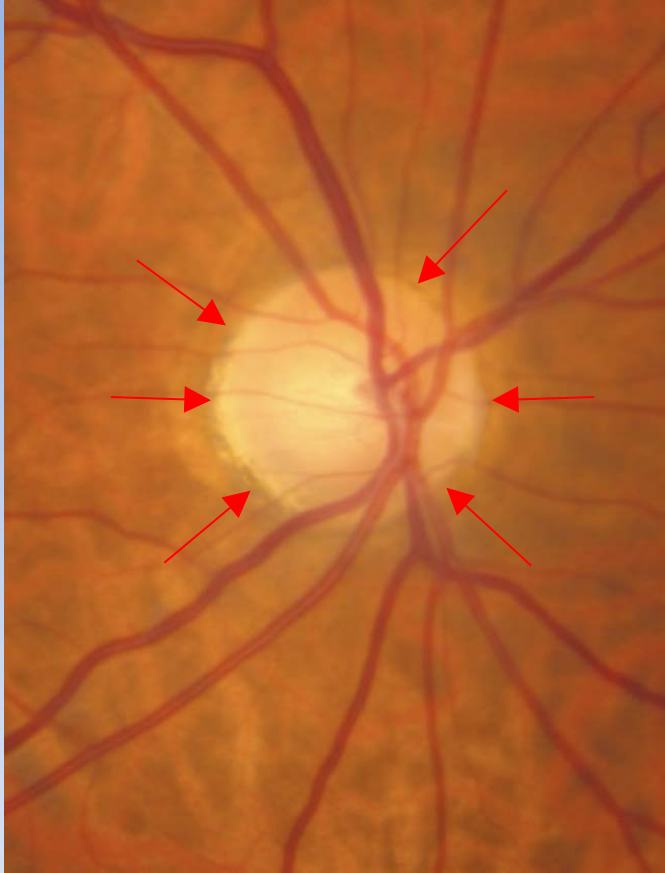


Right eye



Left eye

Figure 1



Right eye



Left eye

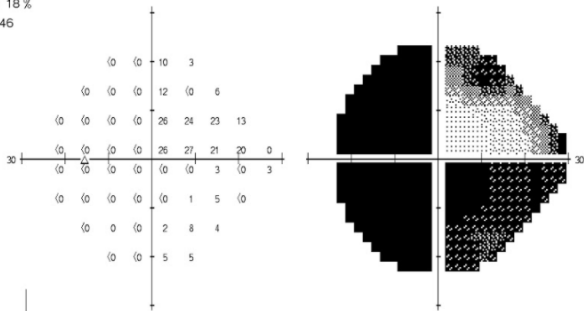
There is diffuse pallor of both optic nerves (red arrows)

Figure 2

Fixation Target: Central
 Fixation Losses: 0/12
 False POS Errors: 0 %
 False NEG Errors: 18 %
 Test Duration: 04:46

Background: 31.5 ASB
 Strategy: SITA-Fast
 RX: -0.50 DS DC X
 Visual Acuity: Time: 10:03 AM
 Age: 55

Fovea: 31 dB



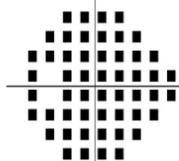
-29 -29 -17 -24
 -30 -31 -32 -18 -32 -23
 -31 -32 -33 -33 -6 -8 -8 -16
 -32 -34 -34 -7 -6 -10 -10 -28
 -32 -34 -35 -35 -35 -29 -32 -25
 -32 -33 -34 -34 -35 -32 -27 -32
 -33 -31 -33 -29 -29 -26
 -32 -32 -25 -25

Pattern Deviation not shown for severely depressed fields. Refer to Total Deviation.

GHT
 Outside Normal Limits
 VFI 17 %
 MD -26.19 dB P < 0.5 %
 PSD 10.12 dB P < 0.5 %

Total Deviation

Pattern Deviation



Pattern Deviation not shown for severely depressed fields. Refer to Total Deviation.

Emory Eye Center

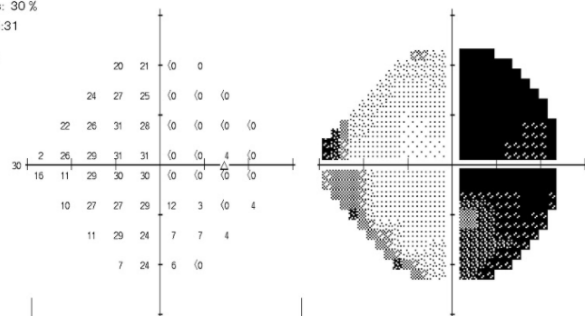
:: < 5 %
 ☺ < 2 %
 ☻ < 1 %
 ■ < 0.5 %

Left eye

Fixation Target: Central
 Fixation Losses: 1/13
 False POS Errors: 0 %
 False NEG Errors: 30 %
 Test Duration: 05:31

Background: 31.5 ASB
 Strategy: SITA-Fast
 RX: -0.50 DS DC X
 Visual Acuity: Time: 9:54 AM
 Age: 55

Fovea: 32 dB



-8 -6 -29 -27
 -5 -3 -5 -32 -31 -30
 -7 -4 -1 -4 -33 -33 -32 -31
 -25 -4 -2 -1 -2 -34 -34 -32
 -11 -19 -3 -3 -35 -34 -32
 -20 -4 -5 -3 -20 -29 -33 -26
 -20 -2 -8 -25 -24 -26
 -23 -6 -24 -32

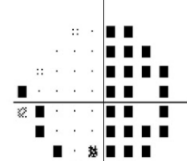
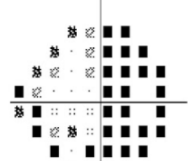
-5 -3 -26 -24
 -3 0 -2 -29 -28 -28
 -4 -2 2 -1 -31 -30 -29 -29
 -23 -1 1 1 1 -32 -31 -29
 -9 -16 0 0 0 -32 -31 -30
 -17 -1 -3 0 -17 -26 -30 -23
 -17 0 -5 -22 -22 -23
 -20 -3 -22 -29

GHT
 Outside Normal Limits

VFI 50 %
 MD -15.91 dB P < 0.5 %
 PSD 13.48 dB P < 0.5 %

Total Deviation

Pattern Deviation



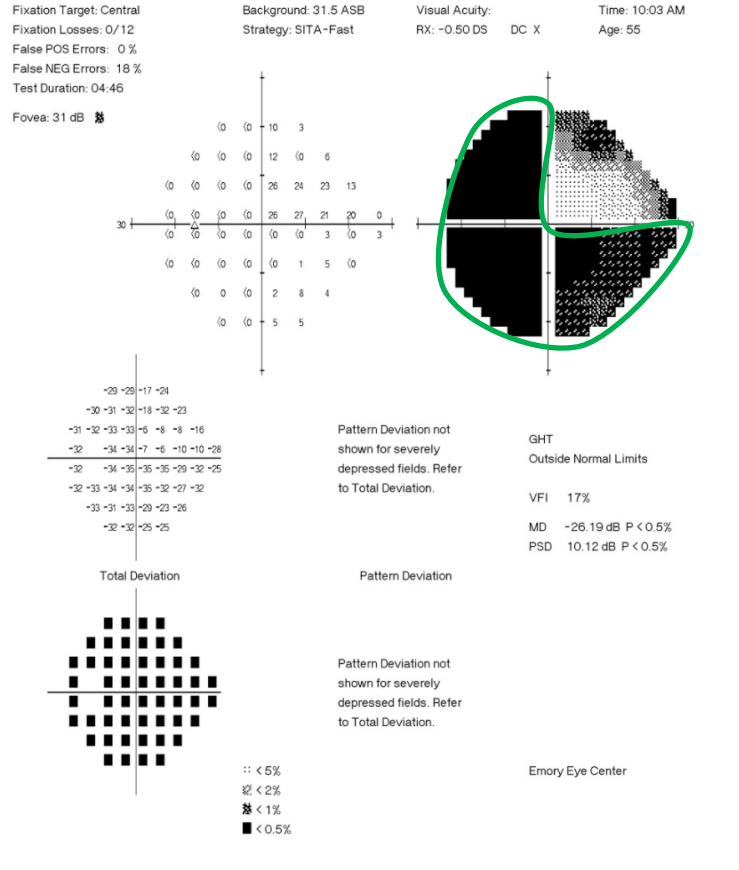
:: < 5 %
 ☺ < 2 %
 ☻ < 1 %
 ■ < 0.5 %

Emory Eye Center

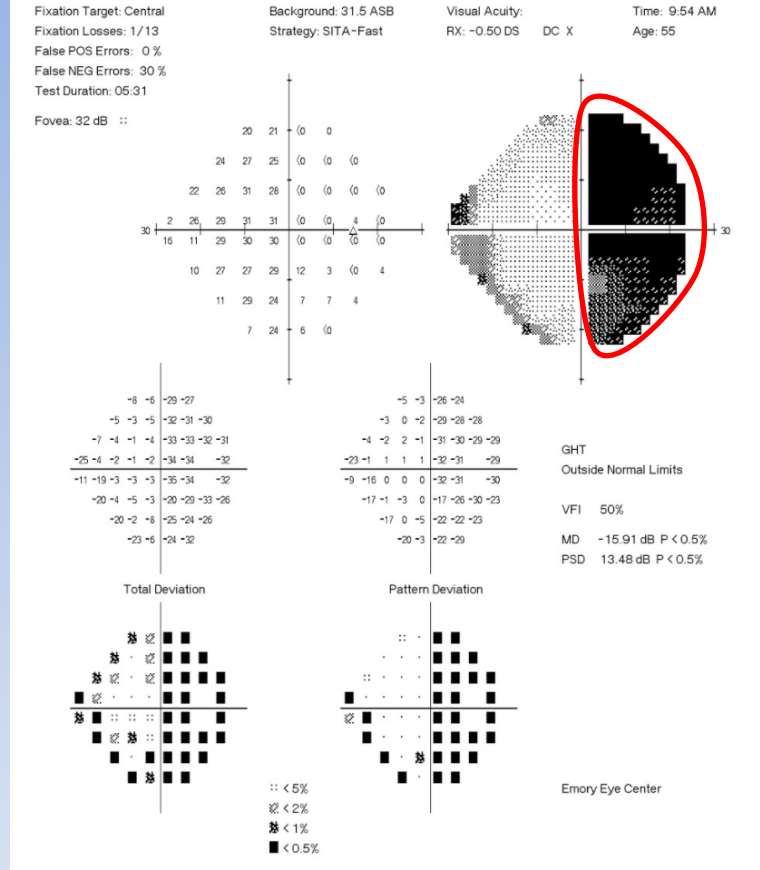
Right eye

24-2 SITA Fast Humphrey perimetry

Figure 2



Left eye



Right eye

There is a temporal visual defect respecting the vertical midline in the right eye (red) and more diffuse visual field loss in the left eye (green) that also respects the vertical midline superiorly

Figure 3

The visual field defect localizes to the “junction” of the left optic nerve and chiasm and is called a “junctional scotoma”

The green shape represents the location of the lesion at the distal portion of the optic nerve at the junction with the optic chiasm

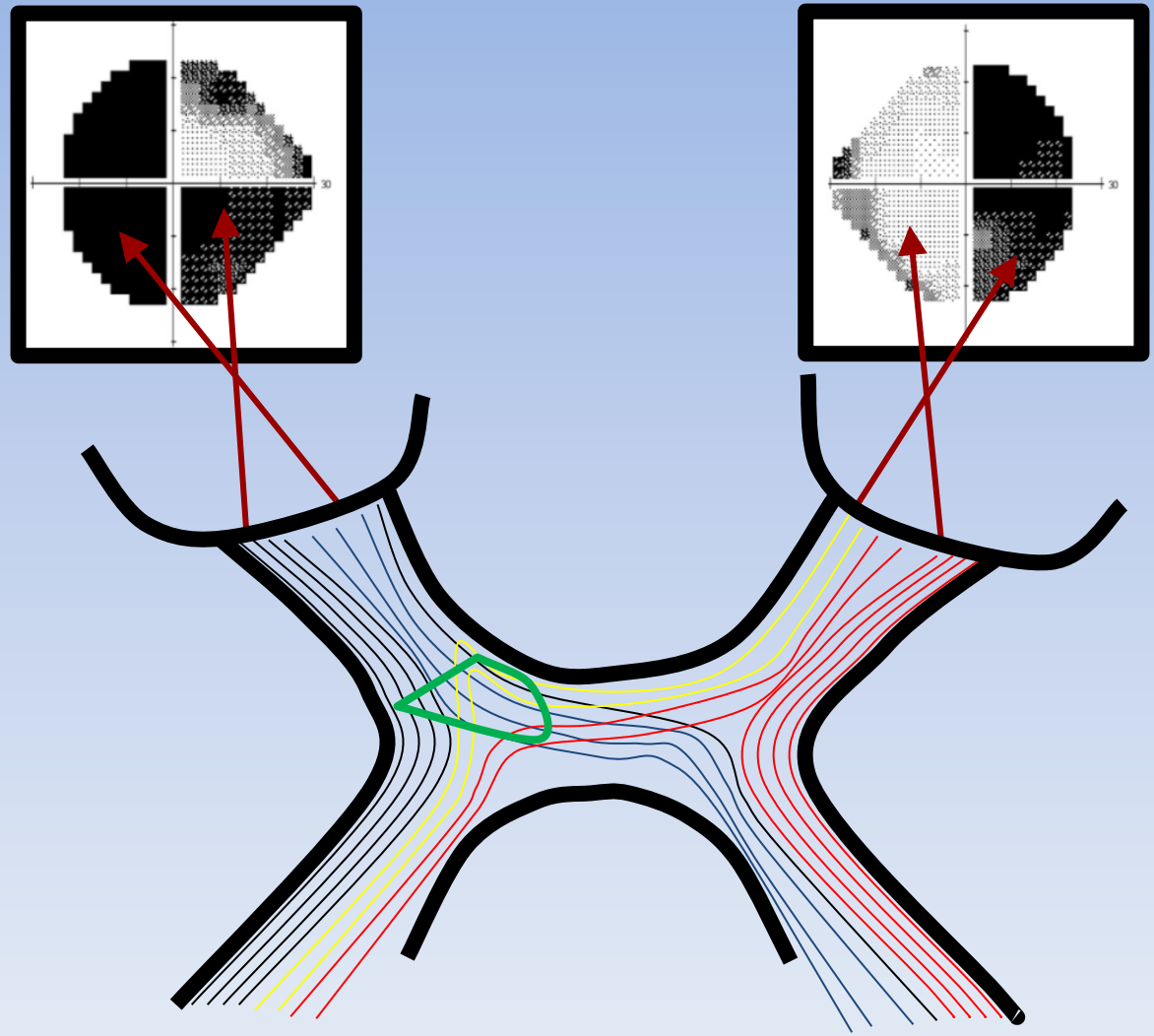
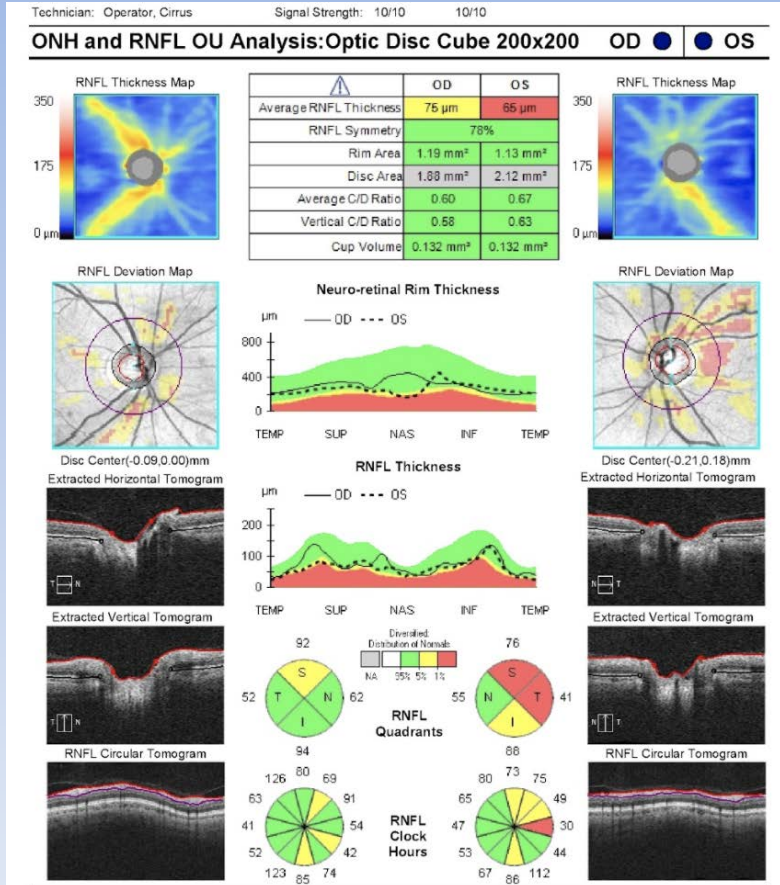


Figure 4

Retinal nerve fiber layer analysis



Ganglion cell layer analysis

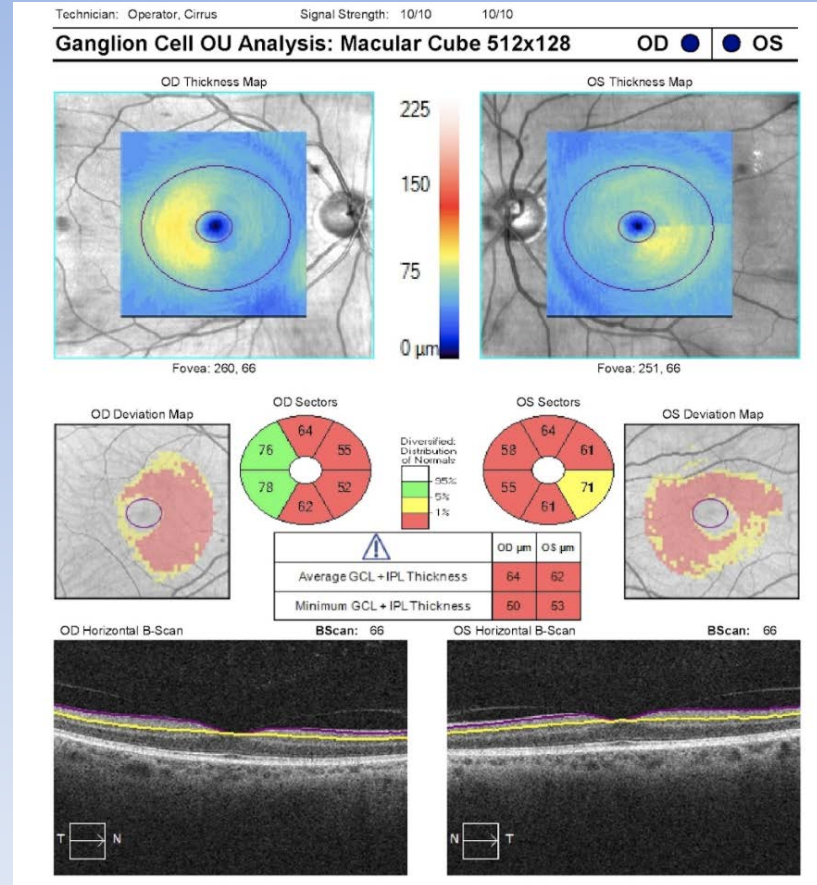
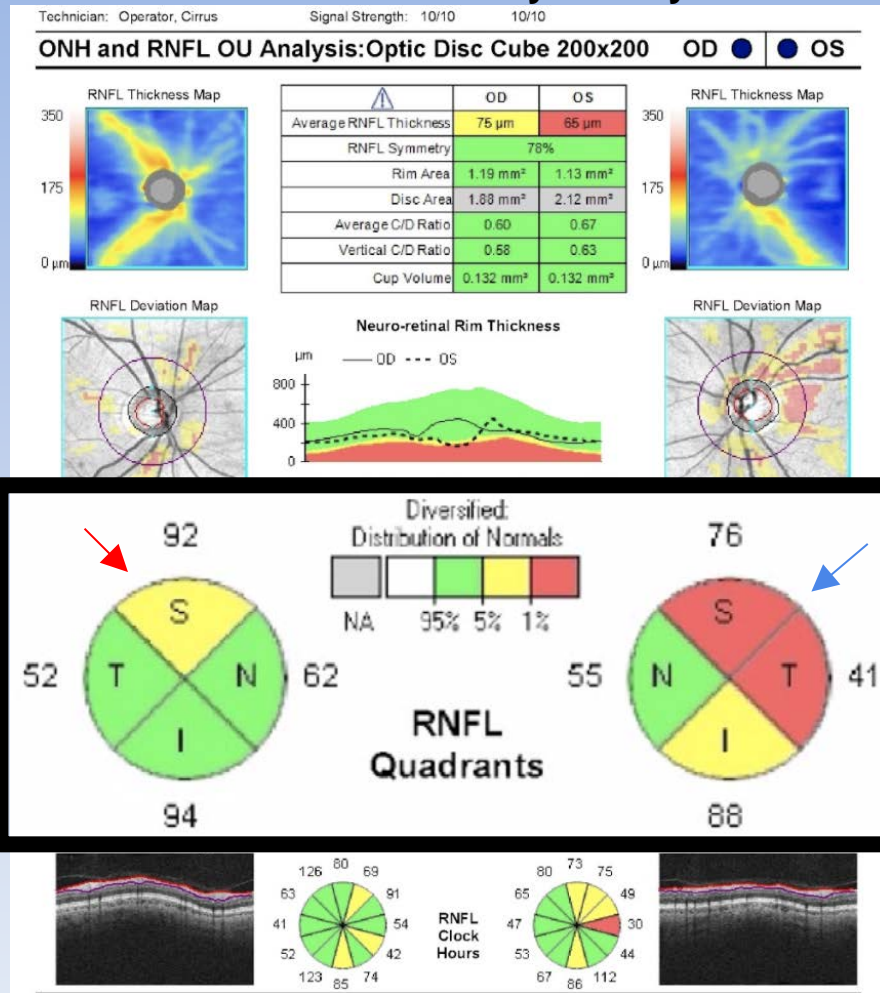


Figure 5

Retinal nerve fiber layer analysis

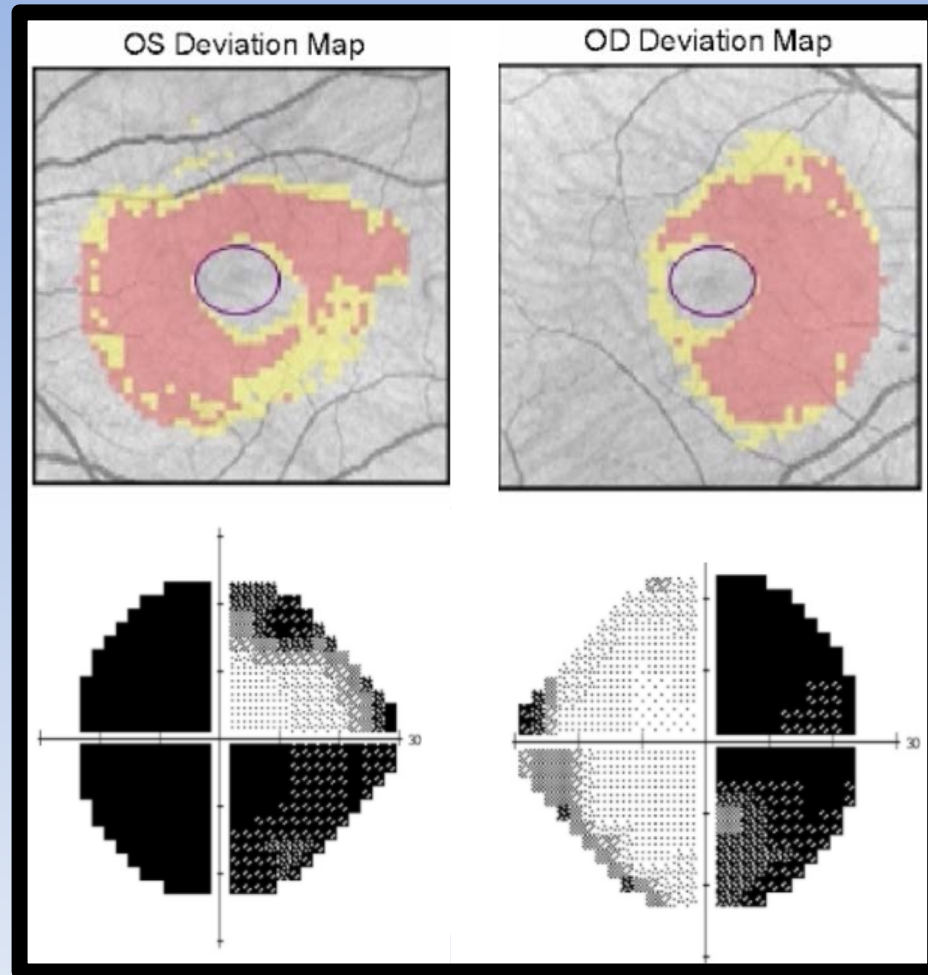


There is superior thinning of the RNFL in the right eye (red arrow) and more diffuse thinning of the RNFL in the left eye (blue arrow)

Red quadrants signify that the RNFL thickness in that quadrant is less than 1% of the normal population. Yellow quadrants mean that the thickness in that quadrant is less than 5% of the normal population

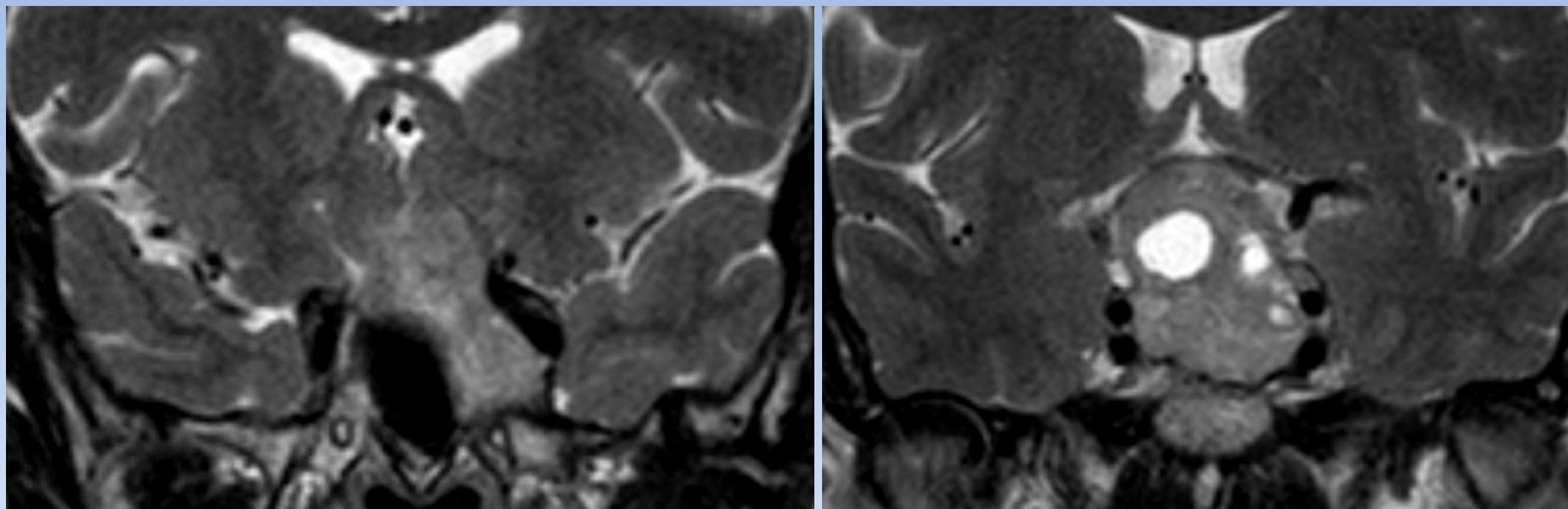
Figure 6

Diffuse loss of macular ganglion cells with relative sparing of the infero-temporal macula corresponds to the diffuse visual field loss with relative sparing of the supero-nasal visual field (since the inferior retina is responsible for the superior visual field)



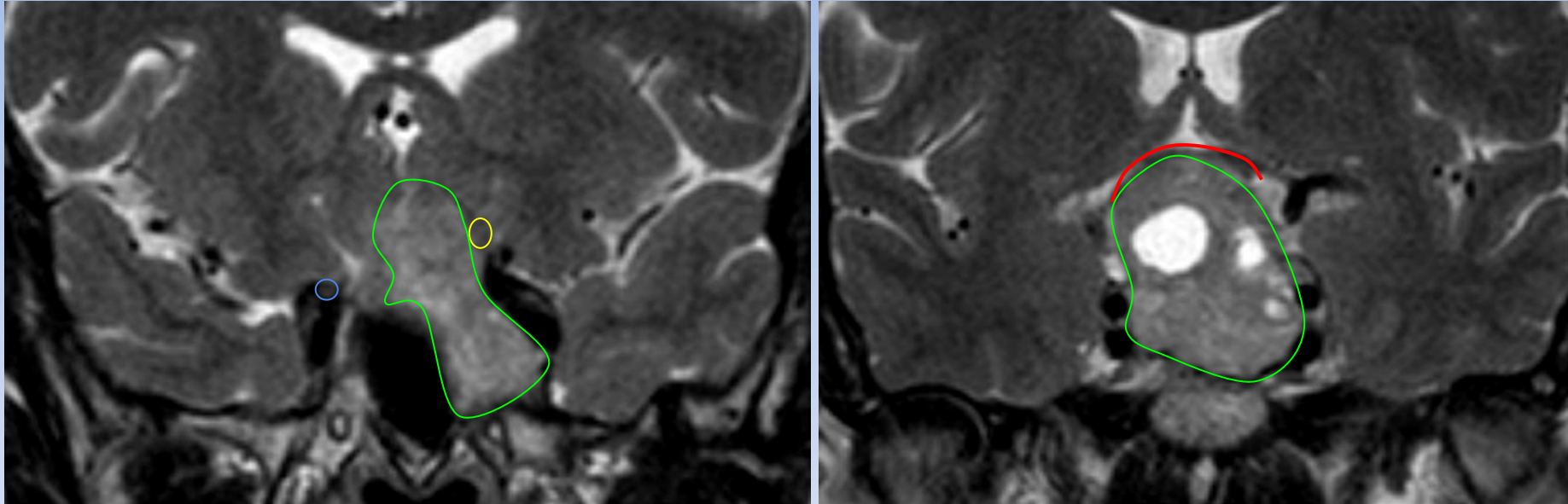
Nasal ganglion cell loss respecting the vertical meridian seen on OCT corresponds to the temporal visual field defect in the right eye (since the nasal retina is responsible for the temporal visual field)

Figure 7



Coronal T2 MRI images

Figure 7



Coronal T2 MRI shows the right optic nerve (blue) and compression of the left pre-chiasmatic optic nerve (yellow) and chiasm (red) by a pituitary adenoma (green)

Summary points:

- A “junctional scotoma” is a visual field defect that localizes to the posterior optic nerve at the junction with the optic chiasm
- The side ipsilateral to the lesion will have central or diffuse loss and the contralateral side will have a temporal defect since crossing fibers are affected
- The most common cause of a junctional scotoma is a sellar/supra sellar mass such as a neoplasm or large aneurysm