



Gaza Ophthalmic Centre

8.2 MEDICAL RETINA

(Part 2)

Ophthalmology

FOR GP's & MEDICAL STUDENTS

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2021

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Good morning. This is part two of the lecture about medical retina, we are gonna focus about the optic disc and the posterior visual pathways

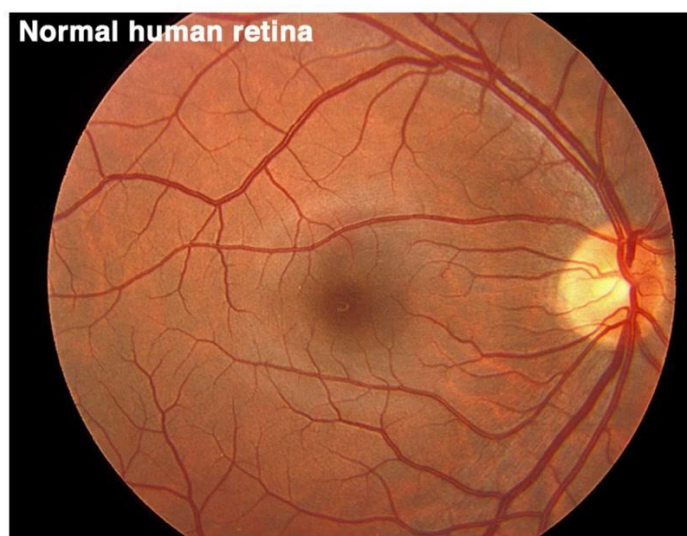


Fig. 12a. Fundus photo of a normal human retina.

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This is the normal fundus where we can see the optic disc, the small cup inside the macula .and between the two temporal arcades, and that looks pretty nice

The Swollen Optic Disc

1. Papilledema
2. Papillitis
3. Malignant hypertension
4. Ischaemic optic neuropathy
5. Diabetic optic neuropathy
6. CRVO
7. Intraocular inflammation



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One of the problems is the, you look on the fundus and you find the optic disc swollen. Actually, this can be due to a result of multiple etiologies. papilledema should be suspected and is the diagnosis. If you have bilateral optic disc swelling, tell it's proved otherwise, populate this is an inflammation and the optic disc swelling on the optic nerve itself. Malignant hypertension can cause severe optic disc swelling, as well as ischemic optic neuropathy, diabetic optic neuropathy central retinal vein occlusion and intra ocular .inflammation

Papilledema

- Disc swelling
- Secondary to
- Raised ICP



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papilledema is defined as bilateral disc swelling secondary to raised intracranial pressure

Papilledema

- Causes

1. Space occupying lesion
2. Intracranial hypertension
 1. Idiopathic
 2. Drugs
 3. Endocrine
3. Severe hypertension



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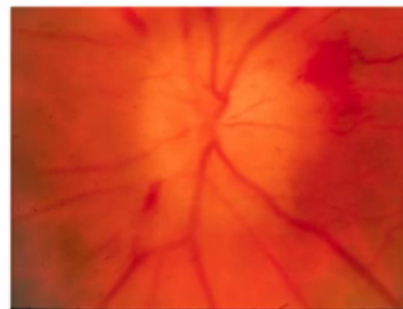
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. It may be caused by space occupying lesion intracranial hypertension which can be either .idiopathic due to drugs or endocrinal imbalance or to severe hypertension

Papilledema

- C/o

1. Headache
 1. Worse in the morning
 2. Valsalva manoeuvre
2. Nausea
3. Projectile vomiting
4. Horizontal diplopia
5. (VI palsy)



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The patient complains usually of headache which is worse and the movement and increases with Valsalva Maneuver there should be there might be also nausea and projectile vomiting. Sometimes, you can have a horizontal diplopia due to sixth nerve affection

Papilledema

Signs

1. Disc swelling
2. Blurred margin
3. Small cup
4. Tiny Hges
5. Obscured BV



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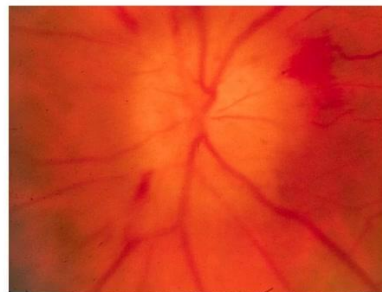
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And on examination we noticed that there is severe disc swelling leading to blurred margin . and the smaller cup and some tiny hemorrhages of the splinter type. You can also notice that the blood vessels are obscured by the issuing edema

Papilledema

Signs

- VA → Normal
- Colour → Normal
- Visual Field Defect



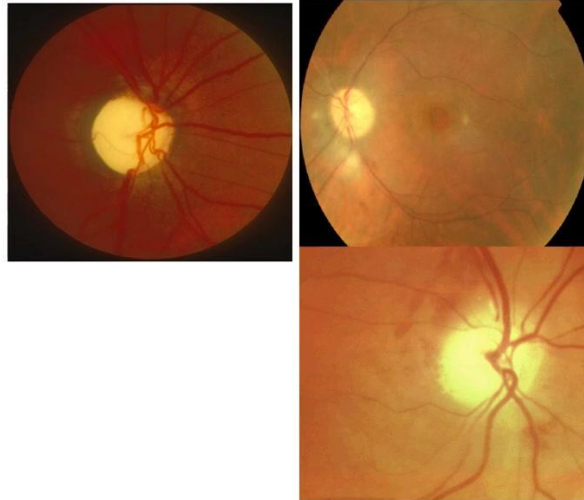
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and in fact, the optic nerves of the nerve fibers further examination will show that the visual acuity is normal and color vision is normal. However, there might be visual field defect either to affection of the optic nerve itself or the visual pathway

The Pale Optic Disc

1. Congenital
2. Secondary to
 1. Raised ICP
 2. Vascular retinal disease
 3. Optic neuritis
 4. Optic nerve compression
 5. Trauma
3. Glaucoma



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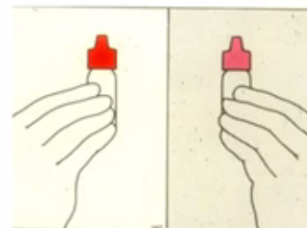


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Behind. Opposite of optic this swelling is a pale atrophic optic disc this might be congenital . however it also might be secondary to chronic raised intracranial pressure vascular retinal disease optic neuritis optic nerve compression or trauma. The also a major concern here is severe optic this coupling secondary to chronic glaucoma

Optic Neuritis

1. Decreased Visual Acuity
2. Painful Eye Movement
3. Decreased Brightness
4. Washed Colour Vision
5. Visual Field Defect
 1. Central Scotoma
6. Relative Afferent Pupillary Defect
7. Normal Fundus! (RBN)



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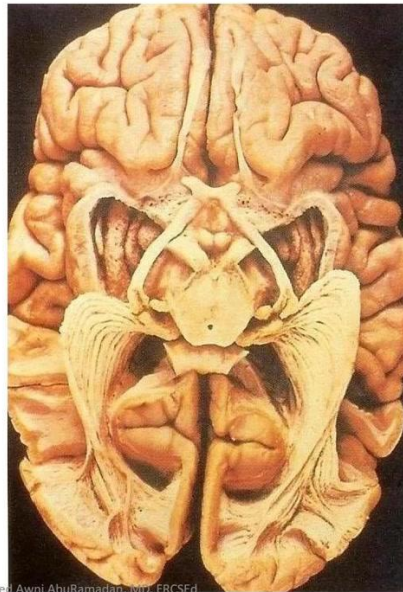
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optic neuritis is an inflammation of the optic nerve itself which leads to decreased visual acuity and there might be pain on eye movement. There is also decreased brightness sense and the colors look washed. On examination a visual field effect usually reveals central scotoma, relative afferent pupillary defect is usually present. However, in cases of retrobulbar Eretic the fundus may be completely normal

Visual Pathways



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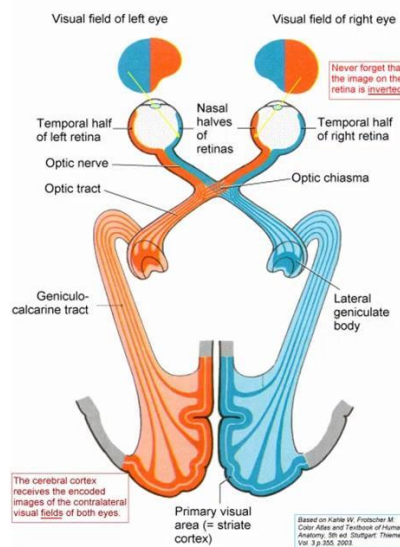


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visual pathways extends from the retina, the optic nerve, the chiasma and the optic tract, which then relay in the geniculate body and then the optic radiation goes through the parietal and temporal lobes to reach the visual cortex and the occipital lobe

Visual Pathways 1

- Retina
 - 1. Nasal retina
 - Receives
 - Temporal visual field
 - 2. Temporal retina
 - Receives
 - Nasal visual field



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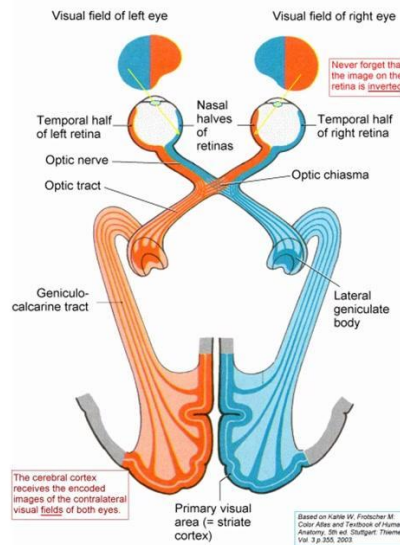


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Note that the nasal retina receives the temporal visual field and the temporal retina receives the nasal visual field so it is a crossed relationship

Visual Pathways 2

1. Optic Nerve
 1. Has both Nasal & Temporal Fibres
 2. Same Eye
2. Optic Chiasm
 1. Nasal Fibers cross to opposite side
 2. Temporal Fibres keep on same side
3. Optic Tract & Optic Radiation
 1. IL Temporal Fibres
 2. CL crossed Nasal Fibres
4. Occipital Cortex
 1. Receives CL Hemifield of Vision



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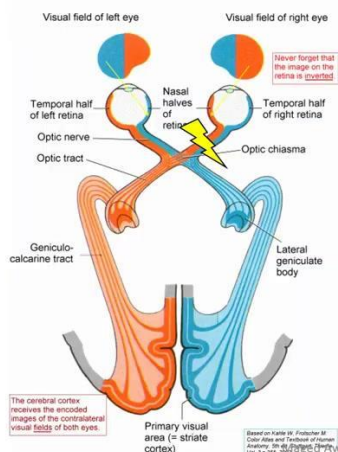
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The optic nerve has both nasal and temporal fibers from the same arm. However, in the optic chiasm the nasal fibers cross to the opposite side while the temporal fibers keep on the same side. So all the visual pathway after that point after the chiasm is crossed, the optic tract and optic radiation have ipsilateral origin temporal fibers and contralateral crossed nasal fibers. Note that the occipital cortex and this way receives the contralateral hemifield of vision. So the left cortex sees the right half of the visual field in each eye while the right occipital cortex perceives the left half of the visual field of each eye. A lesion affecting the optic nerve will affect only that eye and they might lead to either total or partial loss of the whole visual field on that site.

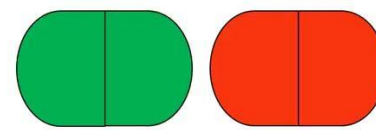
Visual Pathway Lesion

• Optic Nerve



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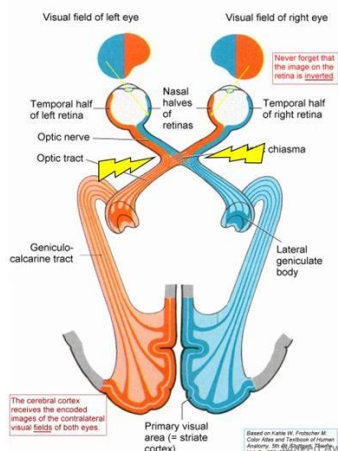
- Total loss of one eye Visual Field

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A lesion affecting the optic nerve will affect that eye and they might lead to either total or partial loss of the whole visual field on that site.

Visual Pathway Lesion

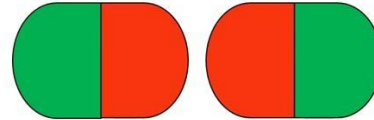
• Optic Chiasm side



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Based on notes by: Fritzsche M, Color Atlas and Textbook of Human Anatomy, 5th ed. Berlin: Springer, 2008. Page 3.2.105, 2008

Carotid Aneurysm



- Binasal Heteronymous Hemianopia

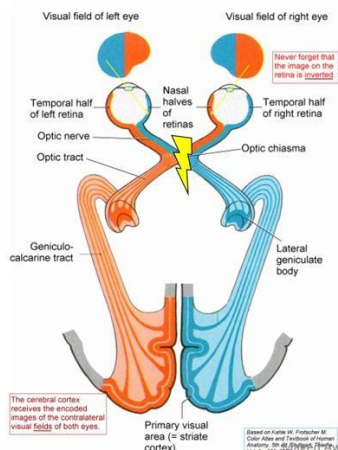


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lesion affecting the optic CHIASM from its side like a carotid aneurysm, for example, will give bi nasal heteronomous, Hemi ANopia both nasal Hemi fields are lost and one is on the right side and the other on the left and that's why it's called heteroHemi ANopia

Visual Pathway Lesion

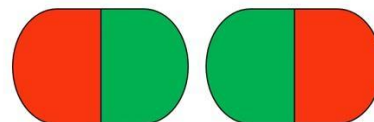
• Optic Chiasm Centre



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Based on notes by: Fritzsche M, Color Atlas and Textbook of Human Anatomy, 5th ed. Berlin: Springer, 2008. Page 3.2.105, 2008

Pituitary Tumour



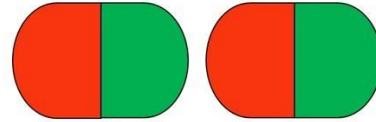
- Bitemporal Heteronomous Hemianopia



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however if the optic has was affected at its center by the pituitary tumor that will cut the crossing nasal fibres but will not affect the it will not affect the temporal fibers. So we see that the temporal fibers carrying the nasal half of the field is good while the damaged nasal fibres carrying the temporal side of the field is absent. So that will lead to bi temporal heteronomous Hemi anopia

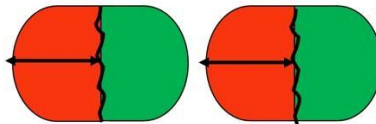
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- 2021 area (= striate cortex) Color Atlas and Textbook of Human Anatomy, 5th ed (Singapore, 2012) Vol 3 p 355, 2002. Dr. Mohamed Awni AbuRamadan, MD, FRCSEd

Visual Pathway Lesion

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- 2021 area (= striate cortex) Basel/Grand Ex. Proseminar: Color Atlas and Textbook of Human Anatomy 5th ed. Stuttgart, 2005. Vol. 3, p. 355, 2005 Dr. Rawni AbuRamadan, MD, FRCSEd

Visual Pathway Lesion

- Occipital Cortex

