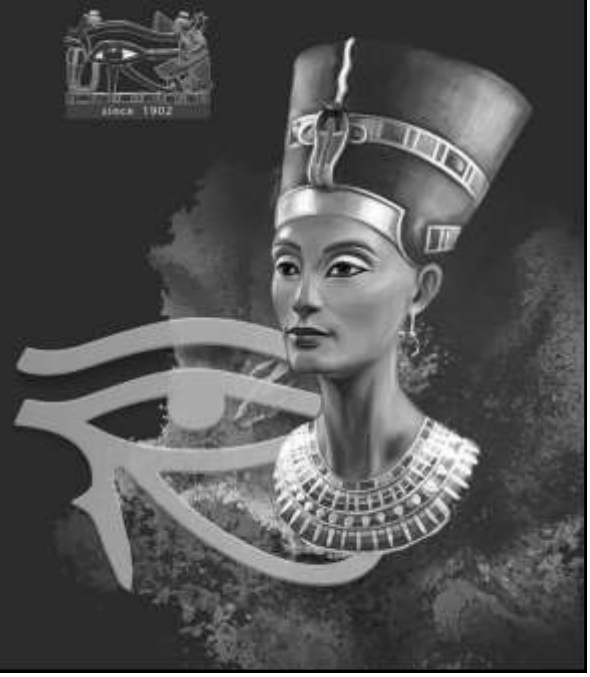
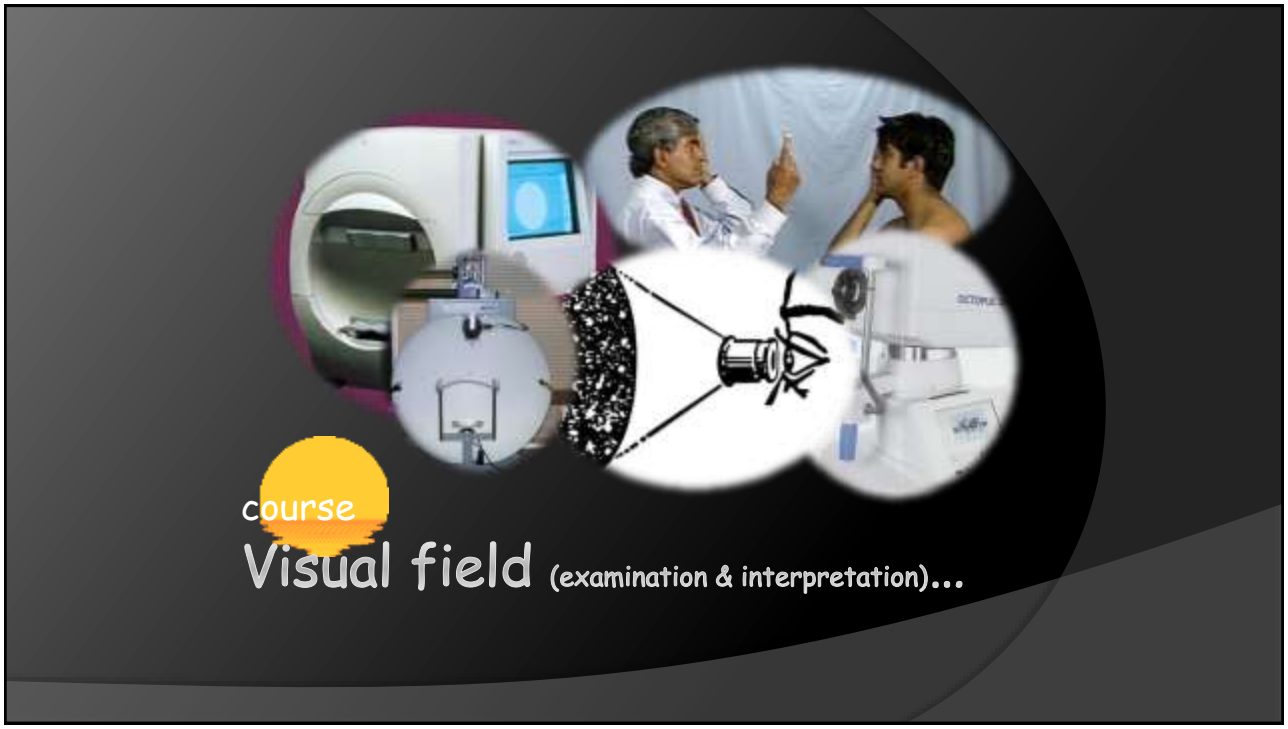
المؤتمر السنوي الدولي للجمعية الرمدية المصرية
INTERNATIONAL CONGRESS OF THE
EGYPTIAN OPHTHALMOLOGICAL SOCIETY
EOS 2023



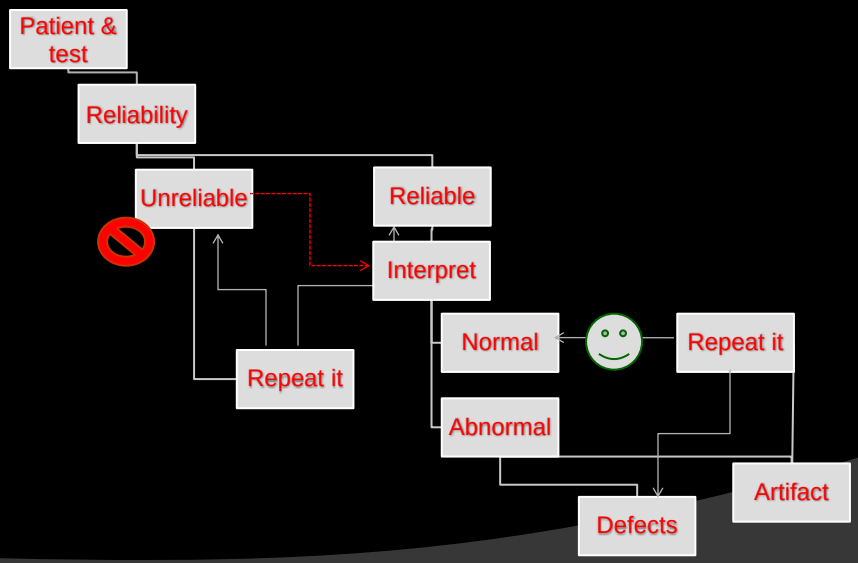
السلام عليكم ورحمة الله وبركاته

Tarek H El-bromboly

Professor of ophthalmology
Zagazig University



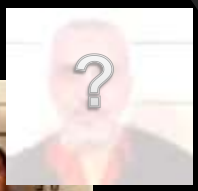
Interpreting Strategy



Diagnosis

- In glaucoma diagnosis we look for characteristic visual field loss…

Diagnosis



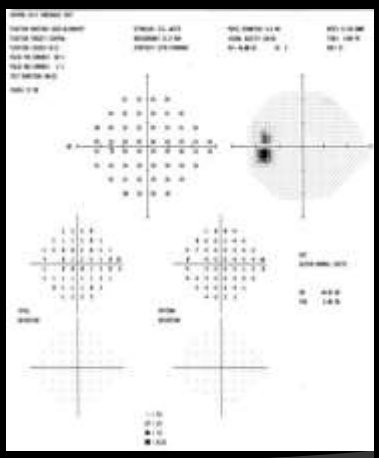
Glaucomatous visual field loss

- Characteristic visual field loss in glaucoma….
  - Precede by optic cup change
  - Correspond to the RNF orie
  - Correspond to optic disc cha
  - Contiguous,
  - Reproducible.

Glaucomatous visual field loss

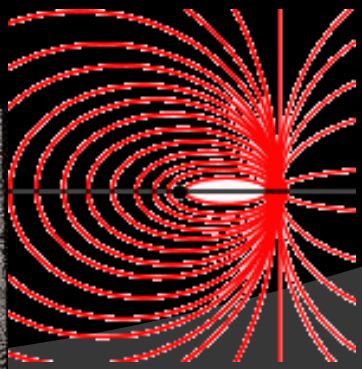
- Clinically recognizable optic nerve changes precede detectable visual field loss in most patients.

Glaucomatous visual field lo



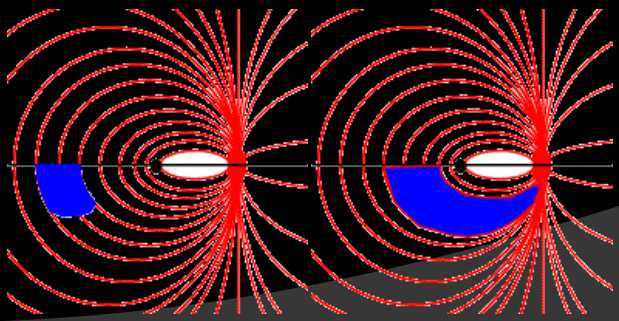
Glaucomatous visual field loss

- The shape of the field defect should correspond to the retinal nerve fiber anatomy.



Glaucomatous visual field loss

- Visual field loss;
  - Arcuate pattern
  - Respecting the horizontal midline (except..).

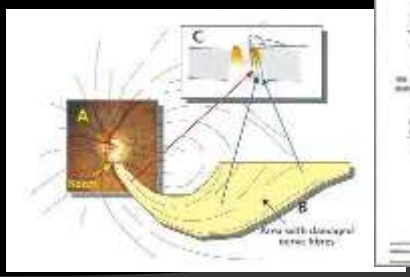


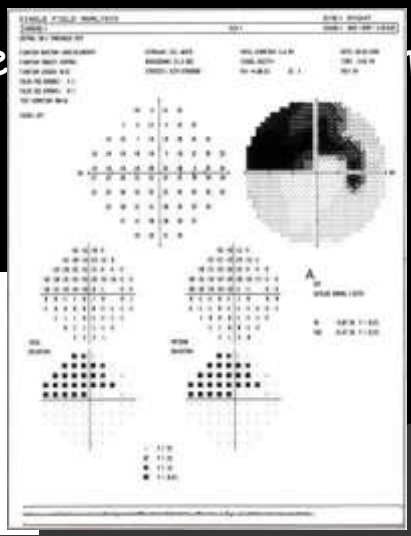
Glaucomatous visual field loss

- The defect should correspond to changes at the optic disc.

Glaucomatous visual field loss

- Inferior optic nerve monly associated with superior



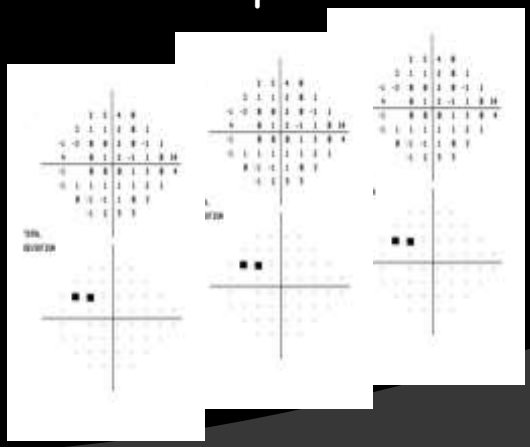


Glaucomatous visual field loss

- The abnormal points should be contiguous (bundle defect),

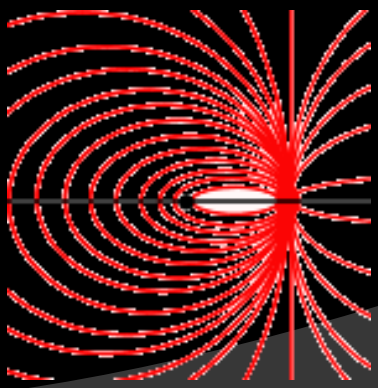
Glaucomatous visual field loss

- The field defect should be reproducible.



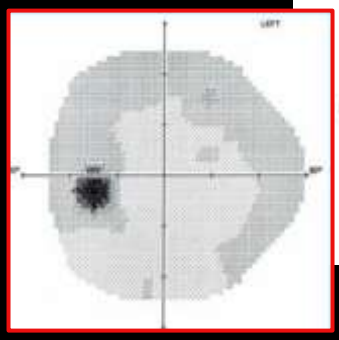
Glaucomatous visual field loss

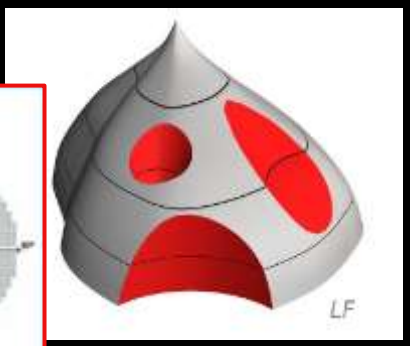
- Characteristic typical defects in glaucoma include….
  - Localized defects,
  - Generalized depression,
  - Advanced defects.

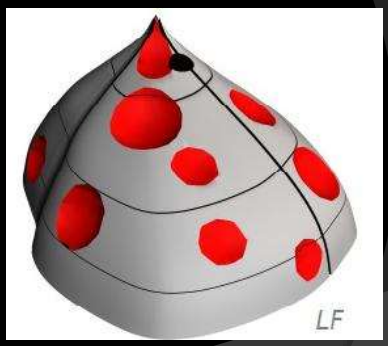


Glaucomatous visual field loss

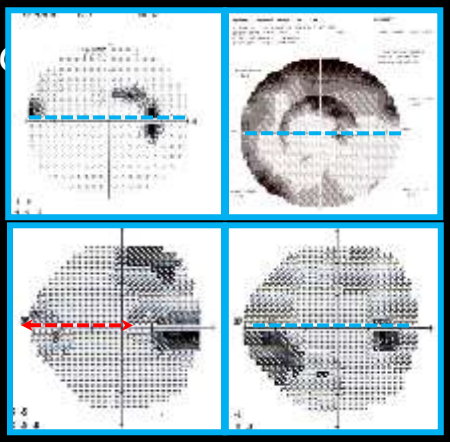
- Localized defects (within the central 30 degree)



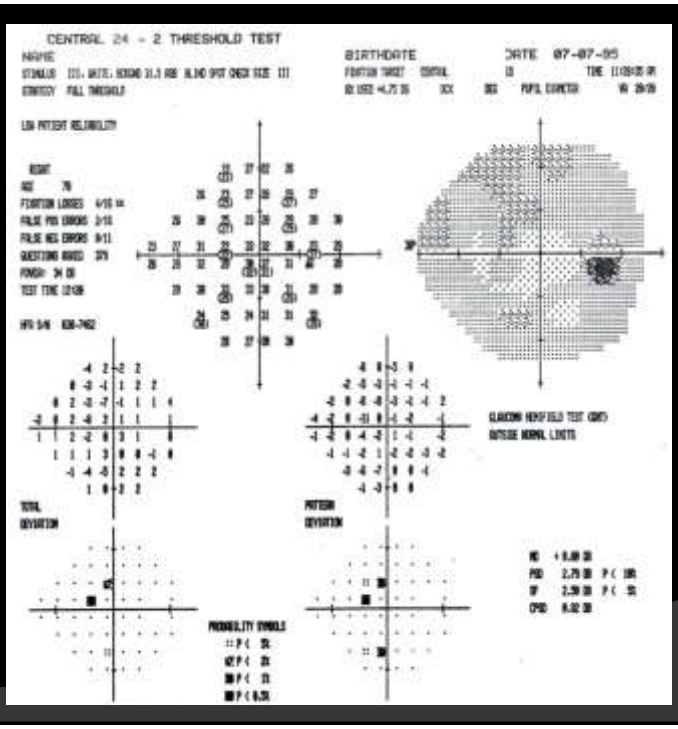


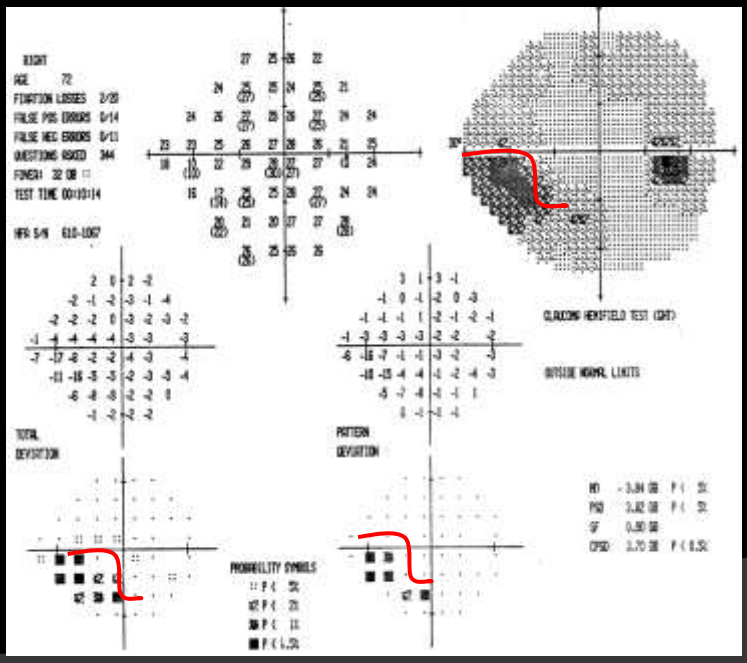


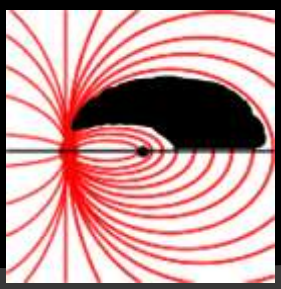
Glaucomatous visual fiel

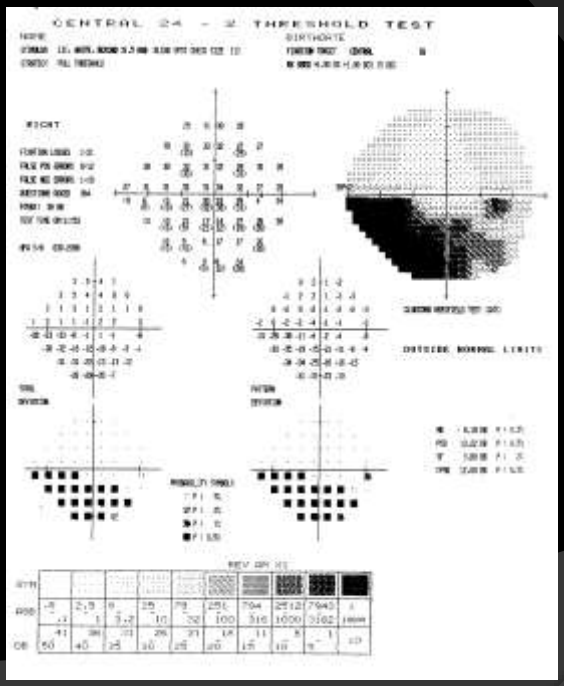


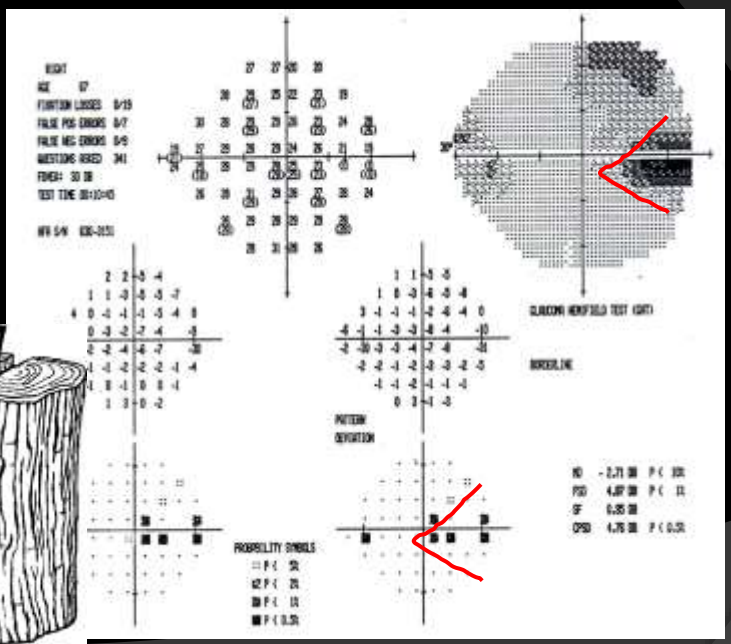
- Localized defects
  - These defects respect the horizontal meridian (except temporal wedge).


CENTRAL 24 - 2 THRESHOLD TEST
BIRTHDATE
DATE 07-07-95
GLAUCOMA HEMIFIELD TEST (GHT)
OUTSIDE NORMAL LIMITS
TOTAL DEVIATION
PATTERN DEVIATION
PROBABILITY SYMBOLS


RIGHT
AGE 72
FIXATION LOSSES 2/20
FALSE POS ERRORS 0/14
FALSE NEG ERRORS 0/11
QUESTIONS ASKED 344
FOVEA1 32 DB
TEST TIME 00:10:14
GLAUCOMA HEMIFIELD TEST (GHT)
OUTSIDE NORMAL LIMITS
TOTAL DEVIATION
PATTERN DEVIATION
PROBABILITY SYMBOLS




CENTRAL 24 - 2 THRESHOLD TEST
RIGHT
OUTSIDE NORMAL LIMITS

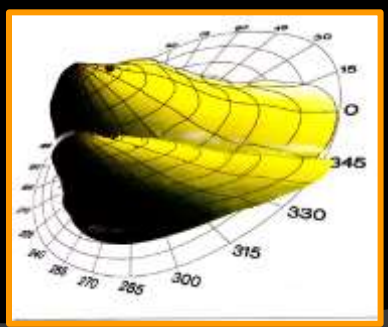

RIGHT
AGE 17
FIXATION LOSSES 0/15
FALSE POS ERRORS 0/7
FALSE NEG ERRORS 0/9
QUESTIONS ASKED 341
PATTERN DEVIATION
PROBABILITY SYMBOLS
BORDERLINE

Glaucomatous visual field loss

- Generalized or diffuse reductions in sensitivity;

Glaucomatous visual field loss

- Generalized or diffuse reductions in sensitivity;
  - Generalized sensitivity reduction (MD),



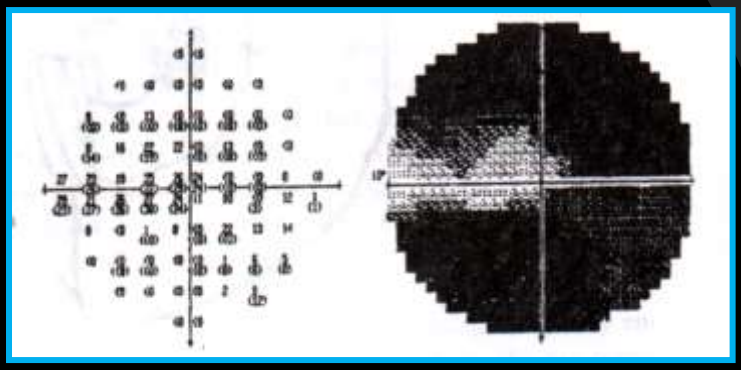
MD	- 6.09 DB	P < 0.5%
PSD	2.34 DB	
SF	1.80 DB	
CPSD	1.32 DB	

Glaucomatous visual field

MD	- 6.09 DB	P < 0.5%
PSD	2.34 DB	
SF	1.80 DB	
CPSD	1.32 DB	

- Generalized sensitivity reduction (MD),
  - One of important glaucomatous defects?
  - Diffuse loss is more likely to be due to cataract or miotic therapy than glaucoma?
  - Mild diffuse depression without localized defect is a rare early finding in glaucoma.

Glaucomatous visual field loss

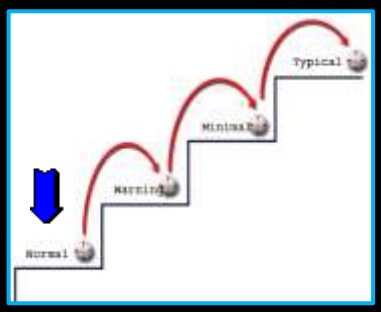


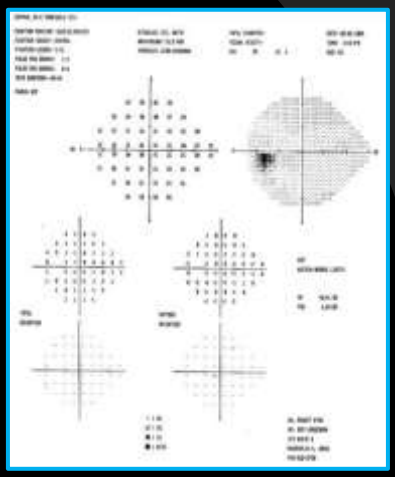
- Advanced Glaucomatous VF Defects;

Classification

- Glaucoma patient show either…
  - Normal field (pre-perimetric glaucoma),
  - Warning sign of impending visual field defect,
  - Early defects (Criteria for minimal abnormality),
  - Typical defects; (mild, moderate & severe).

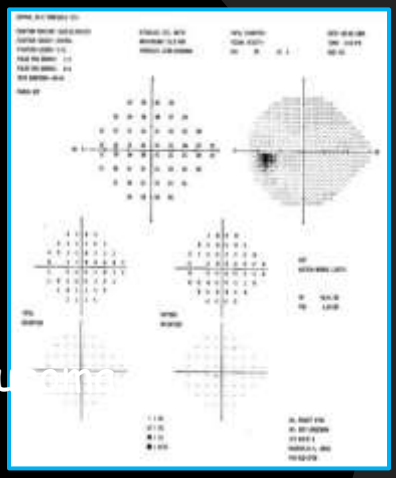
Classification





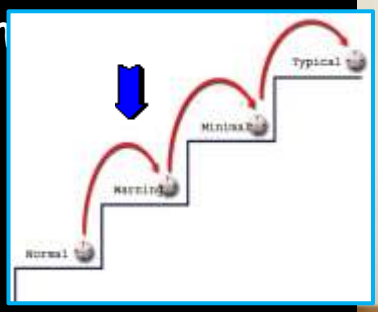
- Normal field
- "Pre-perimetric glaucoma"

Classification



- Pre-perimetric glaucoma;
  - Normal field does not mean no glau
  - Other structural tests (OCT).
  - Other perimetry (SWAP).

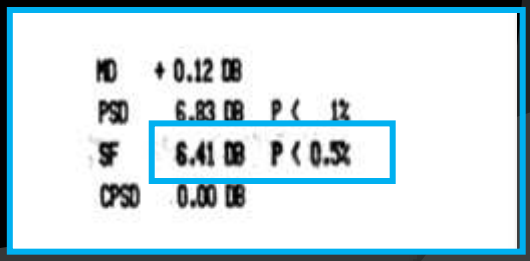
Classification



- Prior to the development of definitive scotomas, early defects may manifest as warning sign of impending absolute visual field defect.

Classification

- …manifest as:
  - An increase in the short fluctuation without localized filed loss may precede development of detectable visual field defects.



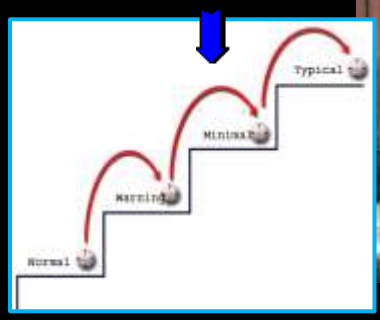
Classification

- …manifest as:
  - Diminished sensitivities in the para-central region (a cluster of two or more points depressed > 5dB compared to surrounding points or a single point depressed > 10 dB is suspicious).

Classificatio

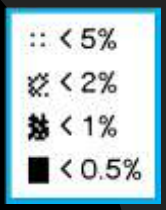
		2	3	4	0			
	3	1	1	2	0	1		
-1	-3	0	0	2	0	-1	1	
4		0	1	2	-14	1	0	0
-1		0	0	0	1	3	0	4
-1	1	1	1	1	1	2	1	
	0	-1	-1	1	0	3		
		-1	2	5	5			

Classification



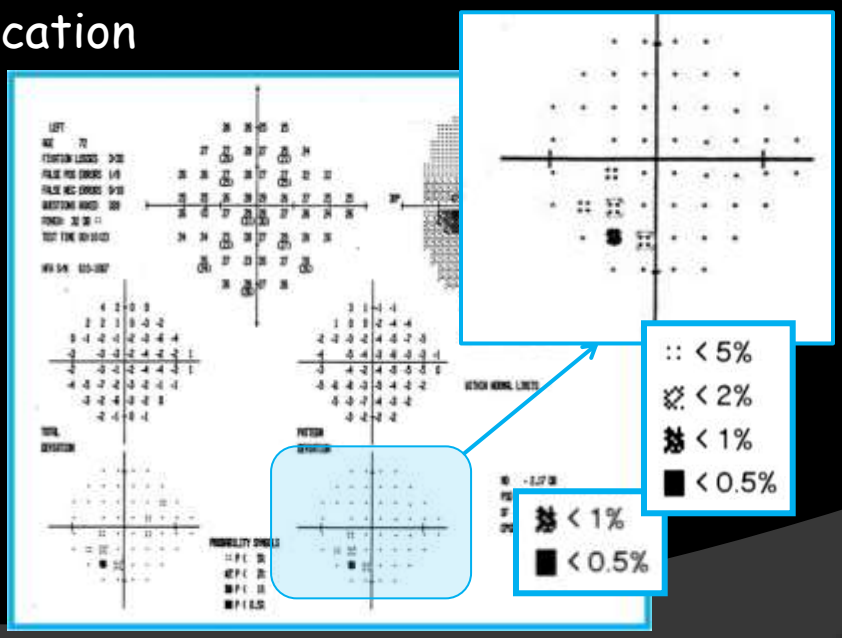
- Criteria for minimal abnormality in glaucoma (Anderson et al., 1993 - Mills et al. 2006);

Classification



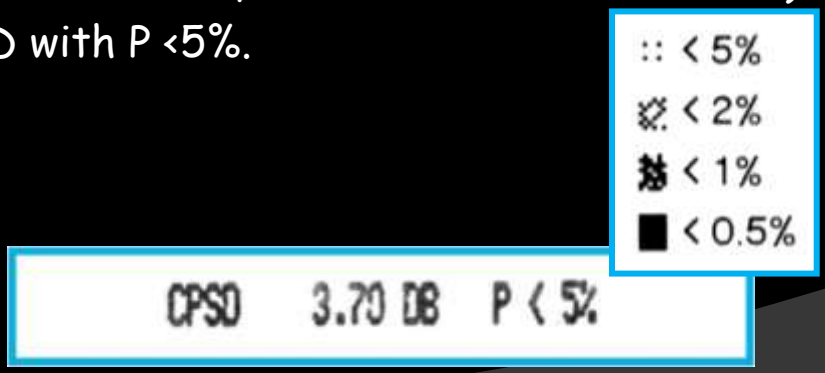
- Criteria for minimal abnormality in glaucoma (Anderson et al., 1993);
  - Three or more adjacent points in an expected location of the central 24 field that P value <5% on the pattern deviation plot, one of which must have P <1% (must be non edge points in central 30 degrees).

Classification



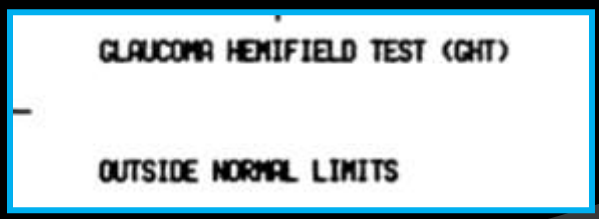
Classification

- Criteria for minimal abnormality in glaucoma (Anderson et al., 1993 - Mills et al. 2006);
  - CPSD with P <5%.

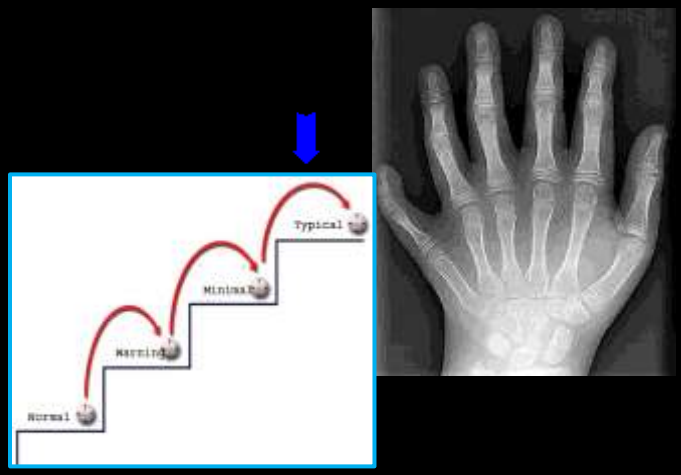


Classification

- Criteria for minimal abnormality in glaucoma (Anderson et al., 1993);
  - GHT 'out side normal limits'.



Classification



- Criteria for typical abnormality in glaucoma (Anderson et al., 1993 - Mills et al. 2006);

Classification

- Criteria for typical abnormality in glaucoma;
  - Early (mild),
  - Moderate,
  - Severe.

Classification

- Glaucoma may be staged on their visual field sensitivities as measured by standard automated perimetry (SAP) based on the
  - Number and depth of defective points,
  - The proximity of defect(s) to fixation
  - Mean deviation (MD), or most recently, the visual field index.

Classification

- The most common criteria used by published researches to stage glaucoma, is that of Hodapp, Parish and Anderson (H-P-A)

Grade	Sensitivity of points within the central 5 degree.			GHF out side normal limits	MD	CPSD with P <5%	Number of points that P value <5% on the pattern deviation plot.	Number of points that P value <1% on the pattern deviation plot.
	0 dB.	Less than 15 dB.						
		Only one hemi-field	Both hemi-field					
Minimal				X		X	Three adjacent	One
Early					No worse than -6dB		Fewer than 25% of points	Fewer than 15% of points
Moderate		X			Between -6 & -12 dB.		Fewer than 50% of points	Fewer than 25% of points
Sever	X		X		worse than -12 dB.		More than 50% of points	More than 25% of points

Classification

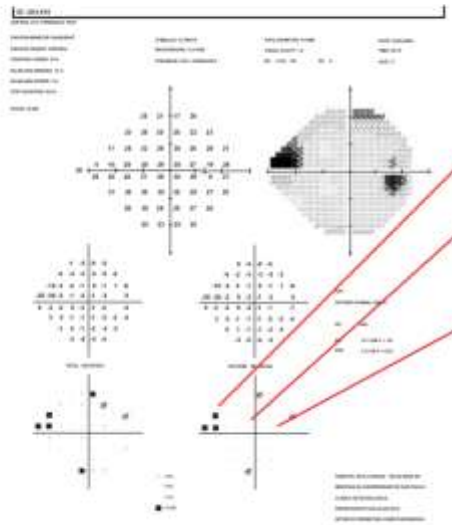
- In 2006, Mills et al. proposed a new system, similar to H-P-A with six stages.

Stage	Humphrey Mean Deviation (dB)	Probability Plot/Pattern Deviation	dB Plot (Stages 2-4) or CPSD/PSD (Stage 1)	dB Plot (Stages 2-4) or Glaucoma Hemifield Test (GHT) (Stage 1)
Stage 0—Ocular hypertension/earliest glaucoma	> 0.00	—	Does not meet any criteria for Stage 1	—
Stage 1—Early glaucoma	−0.01 to −6.00	> 3 contiguous points at P <.05 and > 1 of the points at P <.01	CPSD/PSD significant (P <.05)	GHT "outside normal limits"
Stage 2—Moderate glaucoma	−6.01 to −12.00 And ⇒	Points below 5%: 19-36 and points below 1%: 12-18 Or ⇒	> 1 point(s) with sensitivity of < 15 dB and no point with sensitivity of < 0 dB within the central 5° Or ⇒	1 or 2 points with sensitivity <15 dB within 5° of fixation in only 1 hemifield
Stage 3—Advanced glaucoma	−12.01 to −20.00	Points below 5%: 37-55 and points below 1%: 19-36	Only 1 point with sensitivity of <0 dB within the central 5°	At leasl 1 point with sensitivity of < 15 dB within the central 5° in both hemifields
Stage 4—Severe glaucoma	−20.01 or worse	Points below 5%: 56-74 and points below 1%: 37-74	2 to 4 points with sensitivity of <0 dB within the central 5°	At least 2 points with sensitivity of < 15 dB within the central 5° in both hemifields
Stage 5—End-stage	No visual field in worst eye	No visual field attributable to central scotoma Or ⇒	Worst eye visual acuity of 20/200 or worse attributable to glaucoma	Best eye may fall into any of above stages

Classification

- Advanced Glaucoma Intervention Study (AGIS) subdivided patients' visual fields into 20 stages.
- Similar to the AGIS score, in the Collaborative Initial Glaucoma Treatment Study (CIGTS) visual field score.
- The University of São Paulo Glaucoma Visual Field Staging System (USP-GVFSS).

Classification	Early VF defect (E)	Moderate VF defect (M)	Severe VF defect (S)
VFI:	Higher than 91%	>78% and ≤91%	≤78%



VFI: 96% — E_{96}

Visual field loss outside the 10 central degrees — 10+

One hemifield involved — 1

Not connected to the blind spot — A

E_{96} / 10+ / 1A

THANK YOU

See you next year

المؤتمر السنوي الدولي للجمعية الرمدية المصرية

INTERNATIONAL CONGRESS OF THE

EGYPTIAN OPHTHALMOLOGICAL SOCIETY

EOS 2024

24-26 APRIL 2024

InterContinental Citystars, Cairo, Egypt