

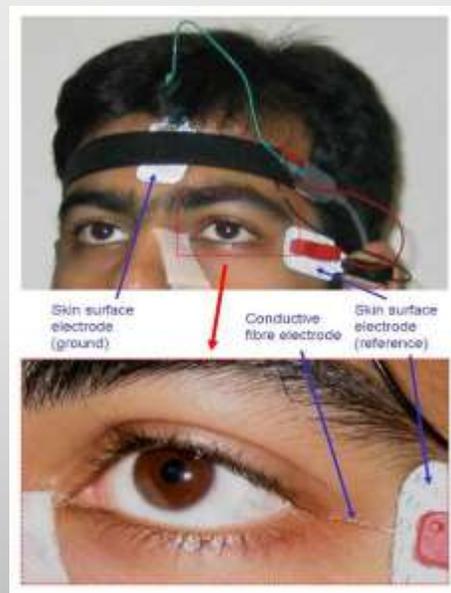


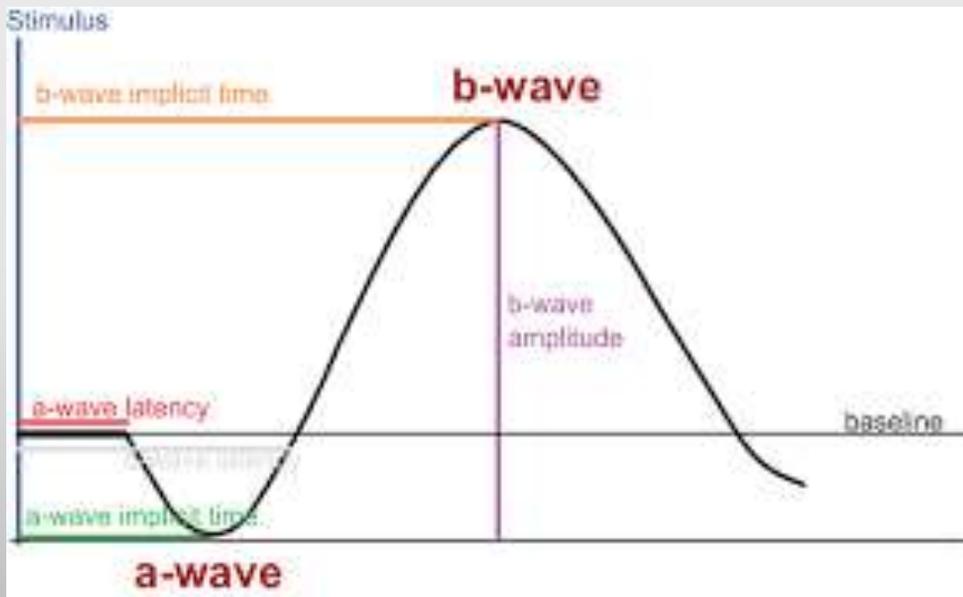
Role of PERG in early diagnosis and monitoring in glaucoma

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PERG overview:

- In ERG, the photoreceptors are more responsive to change in the luminance intensity in terms of eliciting the signal response.



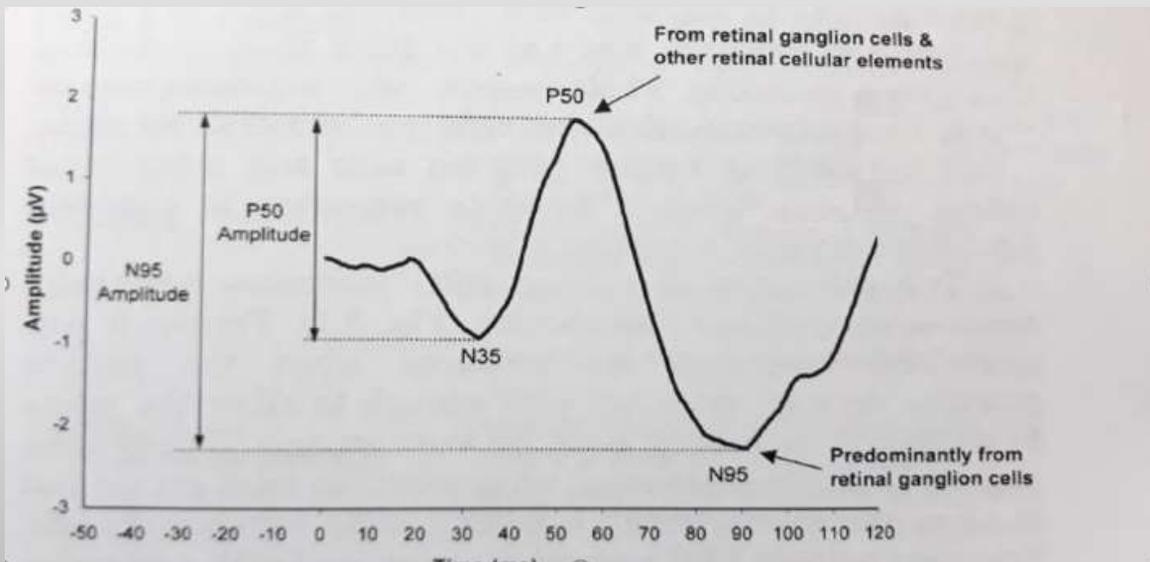


PERG overview

- While with the PERG, the cells involved in the visual signals are more responsive to changing in light/dark edges of the pattern stimulus.
- Transient PERG consists of the basic wave forms.
- It consists of a series of negative (N) and positive (P) wave components with latency and amplitudes .
- Components are N35, P50 and N95.



How PERG works :



PERG overview

- In general, P50 is produced by the retina, ganglion cells and other retinal elements.
- N95 is generated predominantly by the ganglion cells.
- The ratio between P95/P50 amplitudes is not affected or sometimes increased in macular disease; meanwhile it is significantly reduced in optic neuropathy such as glaucoma.



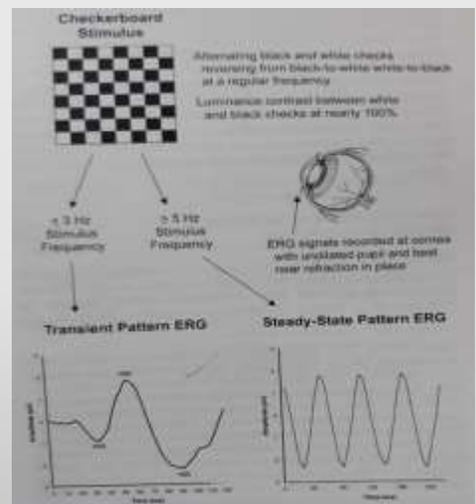
How PERG works :

- PERG is a measure of the retinal ganglion cells function, it's dominated by macular activity due to high density of the photoreceptors and retinal ganglion cell population.
- PERG records the retinal response by generating a checkerboard like stimulus of alternating black and white square checks.
- They keep reversing in a regular phase the frequency, which may be either slow frequency < 3 Hz or fast reverse > 5 Hz.



How PERG works :

- Slow reverse records are called transient state that allow the retina to recover between the stimuli.
- Fast reverse records are called steady state that allow the retina to reach the resting state between stimuli.



Prerequisites for PERG:

- Patients should be un-dilated.
- Patient should be in a good mental state
- Good steady fixation; fixation point in the center of the screen.
- Good visual acuity, patient should have their glasses while doing the test.
- Simultaneous binocular recording is recommended for basic PERG.

Why PERGS is not implemented in our routine?

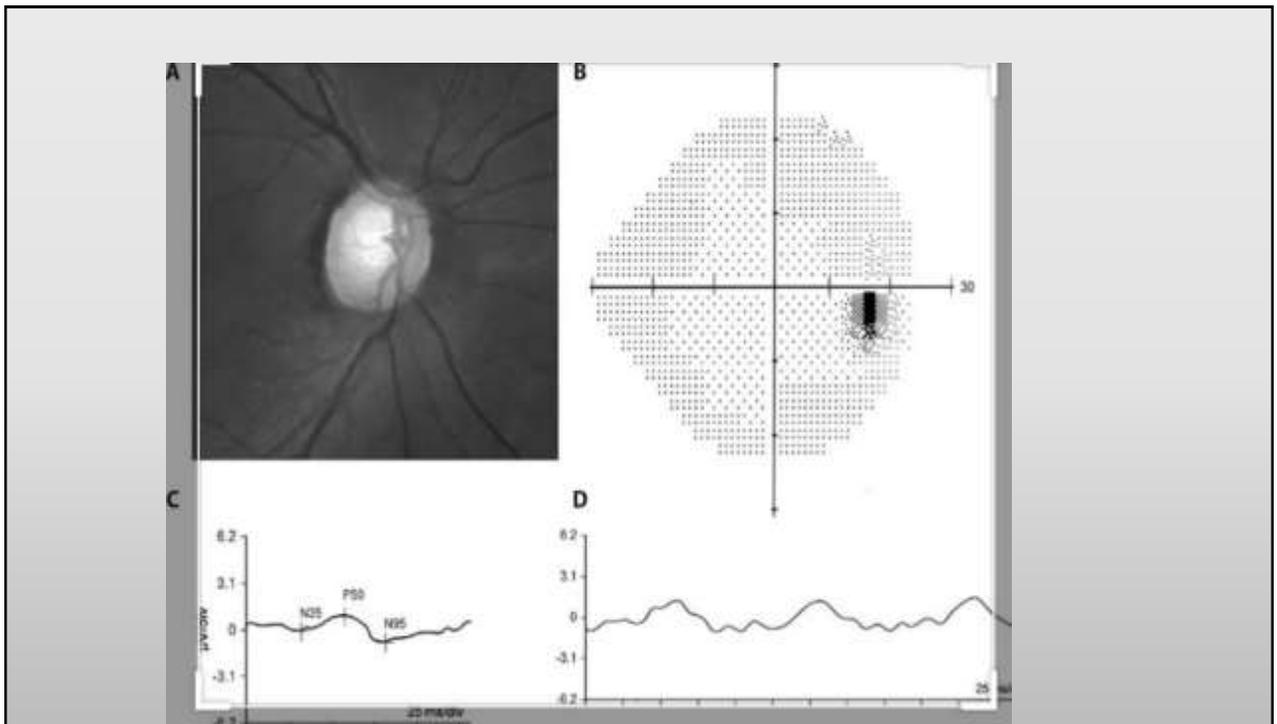
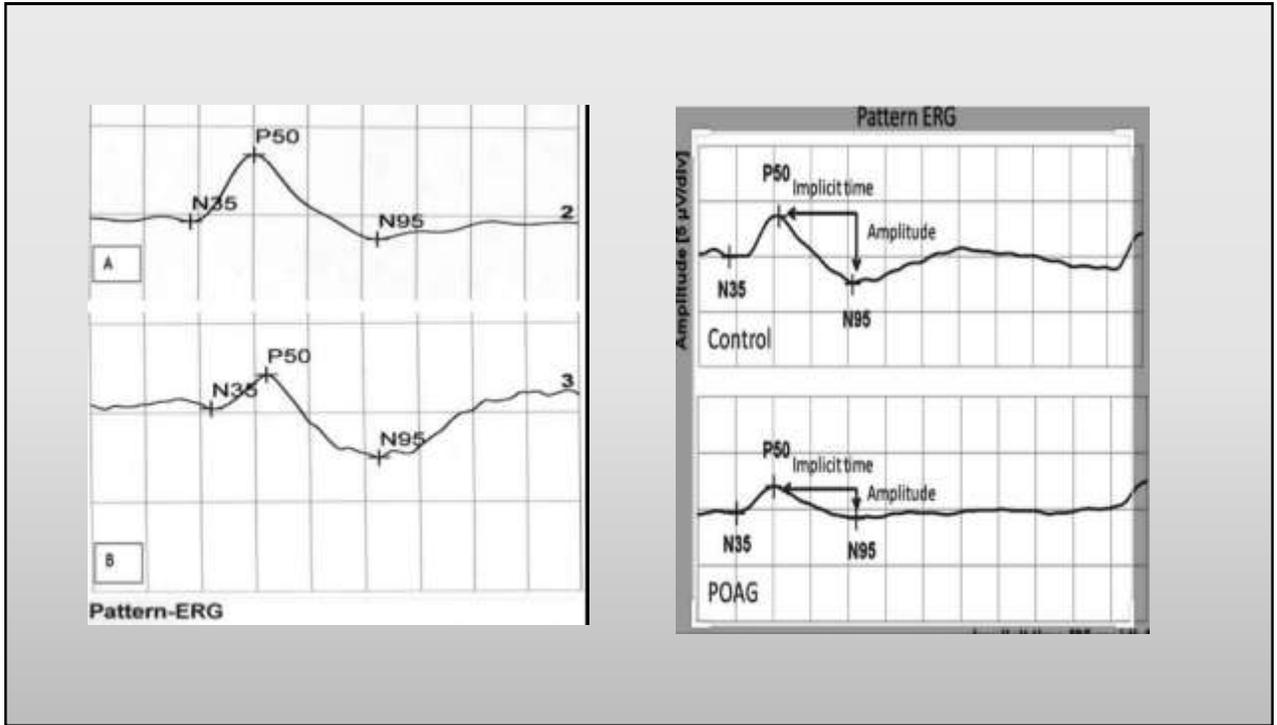
- Right now, many ophthalmologists don't consider PERG to be standard-of-care, despite of the new improvement and developments in the test recording machines.
- This may be due to the following response:
 - The machine is not yet user friendly.
 - May be it is not popular in health care institutes.
 - It needs special expertise in the area of visual electrophysiology.
 - May be the lack of information by most of ophthalmologists in terms of the importance PERG and when to ask for PERG.

What to look for “in glaucoma”?

- PERG is used now days as a tie-breaker when other test results are borderline, especially in glaucoma suspects.
- Glaucoma suspect is challenging situation in terms of whether to treat or not to treat specially when all other tests are normal or borderline.
- In patients with ocular hypertension, PERG was found as sensitive as an early indicator for glaucoma development.
- Also those patients with early glaucomatous field defects or OCT changes, PERG was found to be sensitive way for follow up the activity of the ganglion cells in sense of their response to medical therapy.

What to look for “in glaucoma”?

- If you have OCT changes and VF changes , you are measuring a death stuff; but in PERGs we are measuring the live cell activity that may survive and improve its function.
- Clinical evidence in a recently published study 2018, By Andre Mermoud and his associates, showed that there is a window to detect RGC abnormalities via PERGs, while the cells are still viable, making it possible that intervention may slow down or abate RGC death.



Take home message;

- PERG is a unique test in terms of early detection of retinal ganglion cells damage as in glaucoma.
- PERGs is reliable diagnostic test in patients considered to be glaucoma suspects and those with early glaucomatous changes to monitor the response to medical therapy.
- Also it can be used as macular function test, in diabetic retinopathy, myopic maculopathy, post intra-vitreous injections.

Thank you