جامعة المستقبل

AL-MUSTAQBAL
UNIVERSITY

College of Engineering and Engineering Technologies - Medical Device Technology Engineering

M.A.

AHMED HELMI KADHIM

The third stage

First semester experiences

ECG, EMG, EEG & ERG

ERG

Electroretinogram

It is an abbreviation for Electroretinogram

It is a device that is intended to examine the optic nerve

One of the methods used to measure the electrical response of many retinal cells such as photoreceptor cells, which are nerve cells that convert light into nerve signals and branch into two types: cylindrical cells that operate under the influence of low-intensity light, as these cells are concentrated on the outer edge of the retina and are used in peripheral vision, while the second type is cone cells that operate under the influence of bright light.

It also measures the response of the inner cells of the retina, which branch into bipolar nerve cells and those cells without axonal elongation, which constitute 70% of the ganglion cells in the retina and regulate the work of bipolar cells.

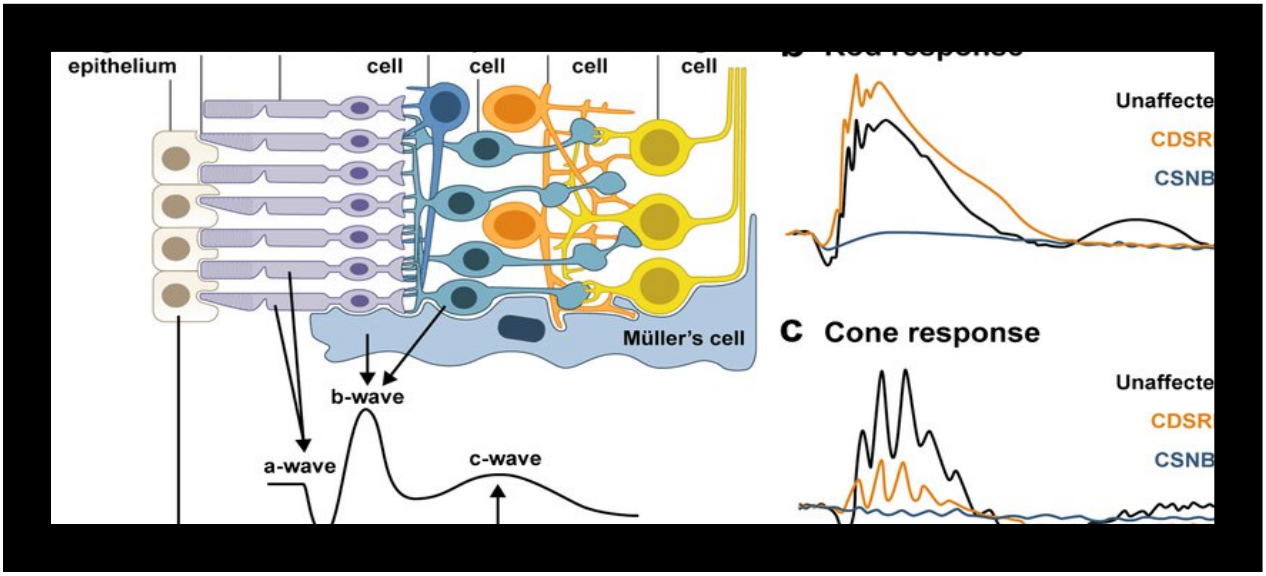
The process is done by fixing an electrical path on the cornea and the skin near the eye, where the eye is exposed to a standard external stimulus, and thus the resulting nerve signals, which are very small and measured in microvolts, are displayed in the form of an axial (time - voltage of the nerve signal). The diagram used consists of an electrical voltage that is affected by the difference in nerve cells in the retina and the difference in the stimulus, which excites the required cells in the eye. If the diagram is used using a light background for an eye adapted to darkness, the resulting response is from the cylinder cells, but if it is applied to an eye adapted to light, the response is from the cone nerve cells, and to ensure the bright light flash, the device used is equipped with waves A (negatively deviated) followed by waves B (positively deviated). Where the edge of the wave A is produced by the photoreceptor cells and the rest of the wave is issued by other nerve cells such as bipolar cells and cells without axonal elongation. Medically, this chart is used by ophthalmologists to diagnose many retinal diseases, and other hereditary degenerative diseases of the retina such as retinitis pigmentosa, retinal punctate white, choroidal degeneration in the eye (resulting in the destruction of photoreceptors in the retina and the retinal pigment epithelium) and cone cell atrophy.

Abbreviation for electroretinogram (ERG) is one of the methods used to measure the electrical response of many retinal cells such as photoreceptor cells, which are nerve cells that convert light into nerve signals and branch into two types: cylindrical cells that operate under the influence of low-intensity light, as these cells are concentrated on the outer edge of the retina and are used in peripheral vision, while the second type is cone cells that operate under the influence of bright light.

It also measures the response of the inner cells of the retina that branch into bipolar neurons and those cells without axonal elongation that constitute 70% of the ganglion cells in the retina and regulate the work of the bipolar cells. The process is done by fixing an electrical conductor on the cornea of the eye and the skin near the eye, where the eye is exposed to a standard external stimulus and thus the resulting nerve signals, which are very small and measured in microvolts, are displayed in an axial form (time - voltage of the nerve signal). The diagram used consists of an electrical voltage that is affected by the difference in nerve cells in the retina and the difference in the stimulus, which excites the required cells in the eye. If the chart is used with a light background of a dark-adapted eye, the response is from the cylinder cells, but if it is applied to a light-adapted eye, the response is from the cone neurons. To ensure the bright flash of light, the device used is equipped with A waves (negatively deviated) followed by B waves (positively deviated). The edge of the A wave is produced by the photoreceptor cells and the rest of the wave is emitted by other neurons such as bipolar cells and axonal cells. Medically, this chart is used by the ophthalmologist to diagnose many retinal diseases, and other hereditary degenerative diseases of the retina such as retinitis pigmentosa, retinal punctate albedo, choroidal degeneration in the eye (resulting in the destruction of the photoreceptors in the retina and the retinal pigment epithelium) and cone cell atrophy. It is also used in many eye diseases such as retinal detachment, diabetic retinopathy and autoimmune diseases that affect the retina.

This chart is also used to ensure the safety of the retina after an accident, injury and internal bleeding. It is also used in many eye diseases such as retinal detachment, diabetic retinopathy and autoimmune diseases that affect the retina.

This chart is also used to ensure the safety of the retina after an accident, injury and internal bleeding.



What are the frequent malfunctions in the retinal nerve examination device:

1 - Damage to the microscope magnifying lens due to misuse

2 - Cuts in the examination pole

3 - The expiration of the life of its batteries, which are of the lithium type

4 - Malfunction in the control panel and other delicate parts.

Question:

What is the benefit of having a headlight for retinal nerve electrical examination devices?

Answer:

Since the entire visual process is a light process, here the light is what performs the visual stimulation process for the medical examination.

END OF THE FOURTH LECTURE

Thanks to everyone and good luck

M.A.

AHMED HELMI KADHIM