EPH - International Journal of Medical and Health Science
ISSN (Online):2456-6063
Volume 7 Issue 4 December 2021
DOI: 10.53555/eijmhs.v4i1.11

ABNORMAL PUPILLARY REACTIONS

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ABSTRACT:

This paper describes about Abnormal Pupillary Reactions.

KEYWORDS:

Afferent Pupillary Defect, Light Near Dissociation

INTRODUCTION:

Pupil is being reacted by two reasons:

i. By light, that is called light reflex.
ii. Near Reflex :

It means when the patient is instructed to look near, the pupil will get constricted. It is called "Triad Mechanism." Triad means three. During near vision, Accommodation + Convergence + Pupillary Constriction occurs simultaneously.

TYPES OF ABNORMAL PUPILLARY REACTIONS

A. AFFERENT PUPILLARY DEFECT
B. LIGHT NEAR DISSOCIATION

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Before describing it, the meaning of Afferent Pathway and Efferent Pathway should be understood.

Afferent Pathway is Stimulation of the light goes to the Brain from the Retina.

Efferent Pathway is Stimulation of the light goes to the Retina from the Brain.

A. AFFERENT PUPILLARY DEFECT

It mainly occurs when Light Stimulation does not reach to the Brain from Retina. But Near Reflex is present in Afferent Pupillary Defect. This is subdivided into Total Afferent Pupillary Defect and Relative Afferent Pupillary Defect.

a) TOTAL AFFERENT PUPILLARY DEFECT

In Total Afferent Pupillary Defect, no Light Stimulation will be transferred from the Retina to the Brain. That's why, when affected pupil is exposed into the light, then Pupillary Reaction will not occur. But, when sound eye is exposed to the light, then pupils of both the eyes will be constricted.

b) RELATIVE AFFERENT PUPILLARY DEFECT

Here, sluggish pupillary reaction occurs when affected eye is exposed to the light. It mainly occurs when improper Light Stimulation comes from Retina to the Brain. It is also known as " MARCUS GUNN PUPIL". Relative Afferent Pupillary Defect is diagnosed with Swinging Flash Light Test. In this test, When normal eye is exposed to the light then pupils of both the eyes will be constricted but when affected eye is exposed to the light then both eyes will remain in Dilated condition. RAPD mainly occurs due to Incomplete Optic Nerve Defect or Retinal Disease.

In case of Afferent Lesion, pupil size of both the eyes will be equal. In Efferent Lesion, pupil size of both eyes will be unequal. It is also known as Anisocoria.

B. LIGHT NEAR DISSOCIATION

The meaning of Light Near Dissociation is pupil will not react to light but pupil will pupil will get constricted when patient is instructed to look at the near object. (Accommodative Target).

Examples are :

- Argyll Robertson Pupil
- Adie Pupil

These two conditions are diagnosed/ differentiated pharmacologically by the drugs 2.5 Mecholyl and 0.125% Pilocarpin.

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In normal cases, pupil will not get constricted by using these drugs. But in case of Light Near Dissociation, pupil will get constricted.

HORNER SYNDROME

The main causes of Horner Syndrome are:

- Cervical Spinal Cord Injury
- Severe Stage of Diabetic Mellitus means Acute Neuropathy

Horner Syndrome is associated with Mild Ptosis as Muller Muscle is affected and pupil constriction due to Sphincter Pupil Muscle

In Horner Syndrome, pupil will not be dilated in dim light. It can be diagnosed properly by 4% Cocain test. In this test, pupil of normal eye will be dilated but pupil of affected eye will not be dilated.

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