RETINAL DETACHMENT

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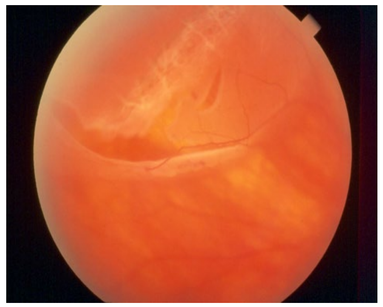
Introduction

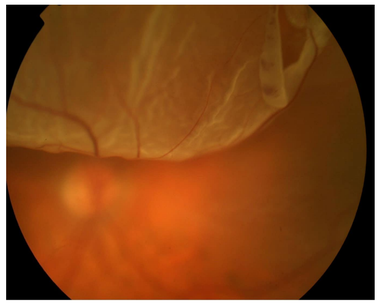
Retinal detachment is a serious ocular condition characterized by the separation of the sensory retina from the underlying retinal pigment epithelium (RPE) and choroid layers. It is considered a medical emergency that requires prompt diagnosis and treatment to prevent irreversible vision loss. Retinal detachment typically occurs due to the presence of retinal breaks or tears, which allow vitreous fluid to seep underneath the retina, leading to its detachment. This detachment disrupts the normal flow of nutrients to the retina, thereby compromising its function and causing symptoms such as sudden flashes of light, floaters, and a curtain-like shadow or veil obscuring part of the visual field. While retinal detachment can affect individuals of any age, certain factors such as aging, trauma, myopia (nearsightedness), and previous eye surgeries increase the risk. Early detection and timely intervention, often through surgical repair, are crucial for preserving vision and preventing complications.

Case presentation

A 55 y/o male with PMHx of hypertension, hyperlipidemia, bipolar disorder, and ADHD presented to ED with 1 day history of loss of vision in the inferior field of vision in his left eye. He reports that he was sitting down at work when there was a sudden, painless loss of vision in the left eye that progressed to encompass the entire bottom half of his left eye. He stated that this has never happened before. He denies chest pain, dyspnea, abdominal pain, fever, chills, nausea, vomiting, diarrhea, weakness, or focal deficits.



Retinal tear: not actual patient
https://eyewiki.aao.org/Retinal_Detachment



Retinal tear: not actual patient
https://timothyjackson.london/gps/retinal-detachment/

Hospital Course

Patient was triage in ED and initially there was a concern for a CVA. Vitals were stable at that time. Physical examination was unremarkable except for finger counting visual confrontation field test, which showed inferior visual field loss. CT of the head and CT-A of the head and neck were unremarkable. Lab results at the time was also unremarkable. A quick retinal image was performed, and it showed a retinal tear. Patient was rapidly transferred from ED to a higher level of care medical center with an ophthalmologist for surgical intervention.

Pathophysiology

Retinal detachment occurs when the neurosensory retina becomes separated from its underlying retinal pigment epithelium (RPE) and choroid layers. This detachment disrupts the normal flow of nutrients and oxygen to the retina, leading to compromised function and potential vision loss. The pathophysiology of retinal detachment involves several key mechanisms:

Vitreoretinal Traction: The vitreous humor, a gel-like substance that fills the space between the lens and the retina, can exert traction on the retina due to age-related changes or vitreous liquefaction. As the vitreous contracts and detaches from the retina (posterior vitreous detachment), it may exert traction on the retina, leading to the formation of retinal tears or breaks.

Retinal Breaks or Tears: Retinal breaks or tears can occur due to various factors, including vitreoretinal traction, trauma, or degenerative changes in the retina. These breaks provide a pathway for liquefied vitreous humor to seep underneath the retina, leading to its detachment from the underlying RPE and choroid layers.
Accumulation of sub-retinal Fluid: Once a retinal break or tear occurs, vitreous fluid can pass through the opening and accumulate between the sensory retina and the RPE layer. This accumulation of sub-retinal fluid further separates the retina from its underlying support, exacerbating the detachment.

Sub-retinal Fluid Dynamics: The presence of sub-retinal fluid creates a physical barrier between the detached retina and the RPE, disrupting the normal exchange of nutrients, oxygen, and metabolic waste products. Without adequate support from the RPE, the detached retina becomes ischemic and dysfunctional, leading to vision impairment.

Proliferative Changes: In response to retinal detachment, the retina may undergo proliferative changes, such as the formation of fibrous tissue or cellular proliferation on the retinal surface (proliferative vitreoretinopathy). These changes can further exacerbate the detachment and complicate surgical repair.

Epidemiology and Risk Factors

Incidence: The annual incidence of retinal detachment is approximately 6.3 to 17.9 per 100,000

Age: Mostly occurs between 40 and 70 y/o; but can occur in younger patients

Gender: No difference between male and female

Race: No racial differences

Family History: A family history of retinal detachment is also recognized as a risk factor, suggesting a genetic predisposition to the condition. Individuals with a first-degree relative (parent, sibling, or child) who has experienced retinal detachment may have an elevated risk compared to the general population.

Risk Factors: Certain risk factors predispose individuals to retinal detachment, including aging, myopia (nearsightedness), previous ocular surgery, trauma, family history of retinal detachment, and certain systemic conditions such as Marfan's syndrome or Stickler syndrome.

Treatment

Treatment for retinal detachment typically involves surgical intervention aimed at reattaching the detached retina and preventing further vision loss. The specific approach to treatment depends on various factors, including the type and extent of retinal detachment, the presence of associated complications, and the patient's overall health status.

The primary goal of surgical treatment is to reattach the detached retina and seal any retinal breaks or tears to prevent further accumulation of sub-retinal fluid.

Discussion

Retinal detachment and stroke are two serious medical conditions that can present with overlapping symptoms, particularly involving sudden visual disturbances. Accurate and prompt diagnosis through comprehensive clinical evaluation is essential to provide appropriate treatment and prevent long-term complications. Having a retinal image is crucial in helping to recognize retinal detachment as a cause of visual disturbances.

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