

Case #31921375

Summary: Bilateral Transient Visual Loss due to transient hypotension causing acute reduction in blood flow to central retinal artery in both the right and left eyes

History

Presentation:

A 72 year-old man complained of 4 episodes of transient darkening of vision.

Inquiry: Bilateral vs Unilateral

Bilateral

Inquiry: Duration

5-20 seconds duration

Inquiry: Episode Characteristics

Darkening of vision in both eyes in the peripheral vision at the same time and then it quickly closes in towards the center, like a tunnel in both eyes, before the right and left eye vision goes out completely.

Inquiry: Activity during the episode

Episodes occurred while sitting, and while driving, and some occur after getting out of bed in the middle of the night to use the bathroom.

Inquiry: Pattern of visual loss

He says that the peripheral vision starts to go dark first in both eyes, and then the center of his vision goes out in the right and left eye at the same time. As the episode ends, the reverse occurs; the center of vision in the right and left eye starts to come back first and then the peripheral vision of both eyes starts to come back to normal.

Inquiry: Other Symptoms

During the episodes he feels a little 'foggy' as if he might faint (pre-syncopal).

Inquiry: Current Medication

He is on medications for high blood pressure, including a beta-blocker two times/day, and angiotensin inhibitor, and a diuretic.

Exam Results

Ophthalmologic exam was completely normal, in terms of pupil exam, ocular motility, visual field testing and fundus appearance. Intraocular pressures were 20 mmHg OD and 21 mmHg OS.

Commentary

This patient has a heart dysrhythmia causing transient episodes of low blood pressure. The important part of the history is that they can occur while he is sitting at rest, which points towards an intermittent heart rhythm disturbance. Other causes from overtreatment of blood pressure usually become symptomatic when changing posture which causes a sudden drop in blood pressure. In this patient example, one would refer for evaluation of a heart dysrhythmia and usually a 24-hour heart monitor would be ordered or an event heart monitor that the patient activates during an episode. If the episodes only occurred with postural changes, then the blood pressure treatment is most likely too aggressive, and the patient may need 24-hour ambulatory blood pressure monitoring to determine how much the blood pressure fluctuates and if his blood pressure medication needs adjustment.

The darkening of the peripheral vision first is a sign that there is decrease in perfusion pressure and blood flow to the central retinal artery. This is because the perfusion pressure is highest in the branches of the central retinal artery supplying the macula and lowest in the peripheral retinal branches of the central retinal artery. So, when the blood pressure drops, the peripheral retina is the first area that is affected, followed by the central retina, if the blood pressure drops low enough.

If the darkening of vision in both eyes occurs simultaneously in the center of vision and not in the periphery, then one should consider that the decrease in blood flow is affecting the occipital pole in primary visual cortex. Although the blood supply to the occipital cortex pole (topographically mapping to the central visual field) may vary, developmentally from one person to the next, most people have a dual blood supply to the occipital pole from both the distal branches of the posterior cerebral arteries and the middle cerebral arteries, forming a "watershed zone" at the occipital pole. Watershed zones of the circulation are where two blood supplies feed an area of the brain and the intersection of the two blood supplies have the lowest perfusion pressure, making it susceptible to drops in blood pressure.

Emboli are usually unilateral and not simultaneous and would not affect the peripheral retinal first, followed by the central retina. If emboli are coming from the carotid artery on one side then, the episodes usually would occur only in the eye on the ipsilateral side. If there are multiple episodes, some in the right eye and some in the left eye, then an embolic source would be looked for in the aorta or from the heart.

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