THE **RETINA** PARTNERS

Encino Santa Monica Valencia Thousand Oaks Century City

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Case of the Month – July 2020

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A 41-year-old woman presented with a sudden change in vision in the right eye she described as spots and a "swirl" in the temporal visual field. She had no known medical history, but reported that she was in the middle of an intense yoga session. In fact, she noticed the visual changes while performing a handstand. Her visual acuity at presentation measured 20/20 in both eyes, intraocular pressures and anterior segment examination were normal. Fundus photos are shown below.

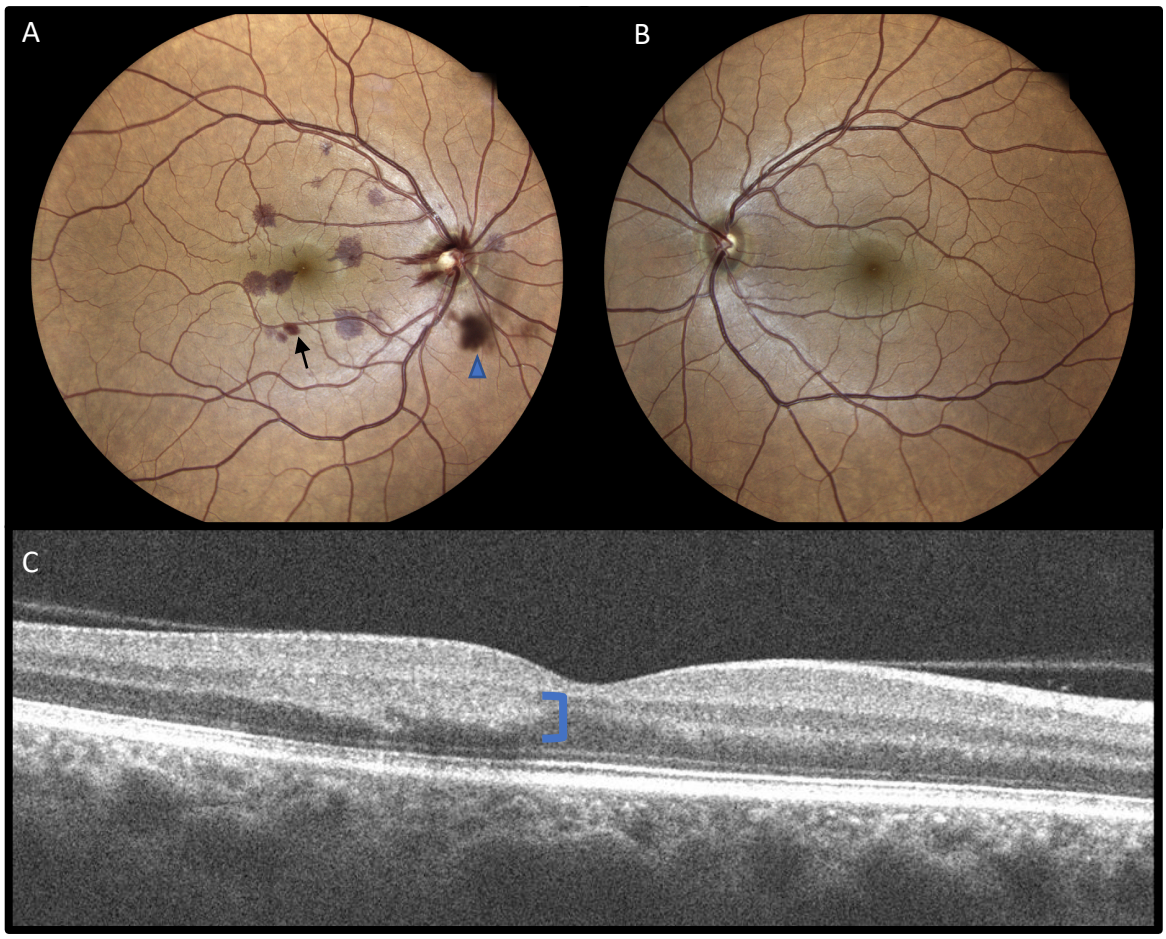

Figure 1: A. Color fundus photo of the right eye shows multiple intraretinal hemorrhages scattered throughout the posterior pole. The majority of these hemorrhages appear to be located deep to the retinal vessels. There is a single more superficial appearing hemorrhage marked by the arrow. There are also disc hemorrhages, and shadowing from mild vitreous hemorrhage (arrowhead). The vascular course and caliber of both the arteries and veins are normal. **B.** Color fundus photo of the left eye is clinically normal. **C.** SD-OCT image through the intraretinal hemorrhages show hyper-reflectivity involving the inner nuclear layer, the outer plexiform layer and

the outer nuclear layer (bracket). Although not shown, the superficial hemorrhage marked by the arrowhead in image **A** is located at the border of the ganglion cell layer/nerve fiber layer border.

Differential Diagnosis: Central retinal vein occlusion, ocular ischemic syndrome, hypertensive retinopathy, Terson syndrome, valsalva retinopathy, diabetic retinopathy, radiation retinopathy.

Clinical course:
The patient's medical history was thoroughly reviewed. Blood pressure was measured in the clinic and found to be normal. The patient denied head trauma, and denied headache or neurological symptoms. She had recently seen her primary care provider who confirmed that she had no history of hypertension, hyperlipidemia, diabetes, or cancer. Given the absence of other vascular changes, and the clinical context, the patient was diagnosed with valsalva retinopathy. She was asked to refrain from intense exercise, including inversions for 6 weeks. At her six week follow up, her subjective visual complaints had resolved. Vision measured 20/20, and anterior examination was again unremarkable. Her follow up fundus photos are shown below.

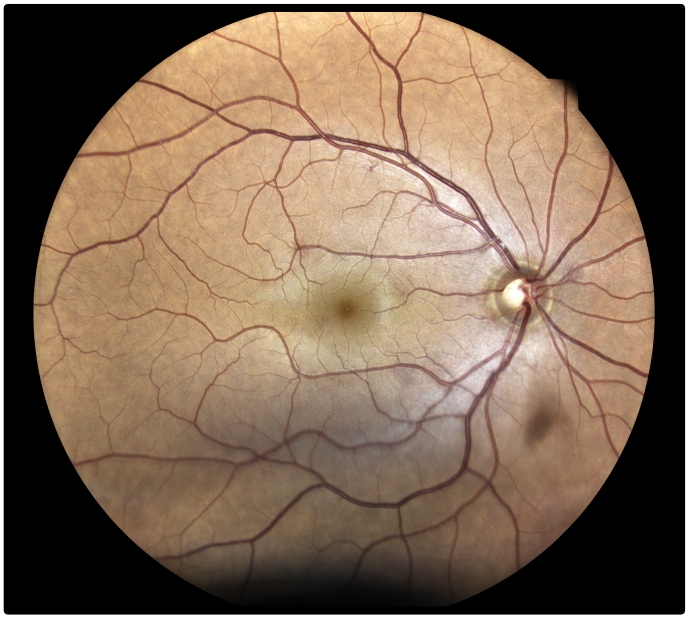

Figure 2: Six week follow up color photo shows near complete resolution of intraretinal hemorrhages, disc hemorrhages and significant improvement in shadowing associated with the previously seen mild vitreous hemorrhage.

Discussion:

Valsalva retinopathy was first described in 1972 as a hemorrhagic retinopathy associated with a sudden increase in intrathoracic or intraabdominal pressure. Increased intrathoracic/intraabdominal pressures are transmitted retrograde through the venous system resulting in increased retinal venous pressures. As a result, small, often superficial, retinal venules rupture causing intraretinal, pre-retinal and sometimes intravitreal hemorrhages. These hemorrhages tend to be centered on the posterior pole.

Clinically, patients describe a sudden, almost always unilateral, painless, central vision loss. The symptoms vary depending upon the severity and layer of hemorrhages. Some patients, like ours, may be minimally symptomatic if hemorrhages do not involve the fovea. Alternatively, severe vision loss may occur if intraretinal, sub-internal limiting membrane or pre-retinal hemorrhage involve the fovea. History is essential in differentiating valsalva retinopathy from the other diseases that can cause hemorrhagic retinopathy.

Valsalva retinopathy has been described in association with a myriad of activities. Many of these activities may be unusual for the patient and therefore easily elicited during the history taking, like weightlifting, inverted yoga or prolonged breath holding. However, other causative events may seem less significant to the patient, like sneezing, coughing, or even straining during a bowel movement. When valsalva

retinopathy is suspected, and there is no obvious inciting event, the patient should be questioned about these seemingly mundane associations.

In addition to a thorough history of the vision loss, a complete medical history should be taken. Although systemic diseases like hypertension and diabetes typically manifest with bilateral findings, it is important to rule out these common pathologies. Unilateral hemorrhages in multiple layers (intraretinal, sub-ILM and vitreous) when not associated with proliferative retinal vascular disease or ruptured macroaneuryrm has a limited differential, which includes, trauma, Terson syndrome (intracranial hemorrhage associated with retinal hemorrhages) and shaken baby. Patients with a history of head trauma, severe headache or neurological deficits should be immediately sent for evaluation and head imaging in the emergency department. In pediatric cases where shaken baby is suspected, the appropriate authorities should be immediately contacted.

Management of valsalva retinopathy is dependent upon severity and location of the hemorrhages. Fortunately, the majority of cases, like our case, resolve without intervention and maintain good vision. However, in cases with severe vision loss secondary to sub-internal limiting membrane, pre-retinal or vitreous hemorrhage, intervention may be indicated. If the vitreous is clear, Nd Yag laser may be used to disrupt the hyaloid face or internal limiting membrane to allow loculated pre-retinal hemorrhage to escape into the vitreous cavity, facilitating clearance. Rarely, in severe cases associated with vitreous hemorrhage, or persistent pre-retinal hemorrhage, pars plana vitrectomy can be performed.

Take Home Points

- Valsalva retinopathy is characterized by unilateral retinal hemorrhages in multiple layers associated with an acute elevation in intrathoracic or intraabdominal pressure
- Visual prognosis is generally good, and patients usually do not require intervention
- Systemic vascular diseases like hypertension and diabetes should be ruled out
- When not associated with proliferative vascular disease or microaneurysm, unilateral hemorrhages in multiple layers of the retina and vitreous should raise suspicion for a limited number of diseases which include valsalva retinopathy, Terson syndrome, and trauma.


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