Vitreous Detachments
by Richard J. Johnson, CPOT

We’ve all had patients arrive in our clinics complaining of those annoying floaters, spider webs and spots. These symptoms could be the early stages of a vitreous detachment. Sometimes it’s difficult to convey to patients exactly what is occurring inside their eyes. Changes such as floaters happen to everyone eventually, maybe not as severe to some as others; however, these symptoms could very well be a vitreous detachment that could ultimately lead to the retina detaching.

So, what exactly is going on in the eye that creates these annoyances? To answer this question and other related ones, we need to understand which components of the eye we are dealing with; then how and why these changes happen. It all begins with the substance that occupies the largest area of our eyeball—the vitreous.

According to Barresi, “The vitreous is a highly transparent connective tissue structure composed of 99% water and 1% solids. It is a gel in its normal state, but in disease it becomes quite liquid.” Additionally, the vitreous makes up two-thirds of the eye. The vitreous attaches to the inner sensory retina in the back of the eye in three locations; the ora serata, the optic disk and the macula. The macula attachment is the weakest of the three. The anterior portion of the vitreous is attached to the back of the lens by a structure called Wieger’s ligament.

Vitreous is composed of plicated membranes that move as the eye moves. It also contains collagen fibers, some salts, soluble proteins and hyaluronic acid. Because of the close proximity of the vitreous and retina, most disease manifestations are related to the attachments of the two structures. Four major symptoms presented are floaters, flashes of light, metamorphopsia and blurred vision.

Floaters are basically the shadow of opacities floating around in the vitreous. These opacities are the result of collagen fibers bunching together in the vitreous. They float easily because the vitreous that is normally a gel begins to liquefy as we age. Other causes of floaters are blunt trauma. As the vitreous begins to liquefy, it tends to pull away from the retina. This is called a vitreous detachment. The posterior vitreous detachment, know as a PVD, is the most common type of detachment.

When patients describe seeing flashes of light, this is the result of the pulling on the retina by the vitreous. The light flashes presented by this tugging are known as photopsias. When the retina is pulled in such a way, it can lead to elevations in the retina that causes what is known as metamorphopsia.
Metamorphopsia is basically distorted vision. Because the retina is not smoothly attached as a result of elevation caused by the vitreoretinal pulling, the now wavy area presents distortion in the patient’s visual field. Metamorphopsia may indicate damage already done to the retina. Distortion caused by metamorphopsia is not the same as blurred vision.

Blurred vision results from the area of detachment that obstructs the vision. It is like looking through cloudy water. This blurred vision may be fairly constant or fade in and out as the floater moves around in the vitreous. This can be a very unsettling feeling for patients because the condition can linger for months.

From my personal experience as a patient with floaters, retinal holes and, about a year and a half ago a PVD, it’s not much fun. For years I’ve experienced floaters in the form of “spider webs” and spots. Most have not been very noticeable; however, four years ago I had a very large floater that became quite a nuisance. It would obstruct my reading vision and blur text the size of a dime; however, I found out that it was nothing compared to a posterior vitreous detachment.

My PVD happened to be centrally located and wreaked havoc with my vision. It remained in my central vision 90 percent of the time, decreasing my distance visual acuity and impeding my depth perception. The way to describe it would be smearing Vaseline across the central portion of one eye. Even though there is no pain associated with a PVD, when it crosses into your central line of sight, it gives the sensation of pain; I guess you can call it a phantom pain.

I have had much improvement since the initial onset of my PVD. It (the floater) has dissolved some but remains a constant annoyance. Even though I am corrected to 20/20 OU, I still have trouble seeing clearly when the floater is present about 55 percent of the time. I have to keep watch for the classic retinal detachment symptoms, flashes of light, sudden onset of floaters and the appearance of a veil covering my vision.

As a paraoptometric technician, you will deal with patients experiencing these conditions and others. It is vital to recognize the signs and symptoms of vitreous and retinal detachments. Patients may not always convey their complaints in a way that is easy to understand, so our job is to ask those questions that will solicit the necessary information to get the patient referred to the provider in a timely manner. We are the first line of triage in many cases, and it helps to be alert and knowledgeable of these conditions.

Along with being first line triage, one of the most important things we must do is to listen intently to our patients. The patient may present to our office or we may receive a call from a patient experiencing certain symptoms. In such cases, have the patient come in to be seen immediately or report to the optometrist or ophthalmologist. Some patients may be slow in wanting to come in. You should always ensure the patient knows that if the condition gets worse, i.e., flashes of light, sudden onset of floaters or a veil coming down over the vision, to get to the optometrist, ophthalmologist or emergency room.
immediately, but it is best to have them come in right away.

Document all such encounters to ensure you have the patient’s name, date and time of the call and instructions provided to the patient. This warning will help protect you and your clinic from liability suits. If in doubt, always speak with your provider on how best to handle the patient. Remember, it is always better to err on the side of caution.

References

2. American Academy of Ophthalmology, Basic and Clinical Science Course “Retina and Vitreous”
4. Lemp, Michael A and Snell, Richard S., Clinical Anatomy of the Eye
“Vitreous Detachment”

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Select the option that best answers the question.

1. Metamorphopsia is a condition characterized by which of the following:
   a. Blurred vision
   b. Distorted vision
   c. Scotomas
   d. Eye turn

2. The most common type of vitreous detachment is ____________.
   a. Superior detachment
   b. Complete detachment
   c. Posterior detachment
   d. Retinal detachment

3. The vitreous attaches to the retina at how many locations?
   a. 1
   b. 2
   c. 3
   d. 0
4. Which of the following is not a manifestation of vitreoretinal disease?
   a. Blurred vision
   b. Floaters
   c. Distorted vision
   d. Increased acuity

5. The vitreous is not composed of which of the following?
   a. Vitreous gel
   b. Protein
   c. Water
   d. Salts

6. What causes floaters to be created in the eye?
   a. Pieces of the retina breaks loose and floats around in the vitreous
   b. Collagen fibers in the vitreous bunching together
   c. Salt deposits floating in the vitreous creates shadows on the retina
   d. Glial cells break loose and create shadows on the retina

7. What structure attaches the anterior vitreous to the back of the lens?
   a. Weiss’s ligament
   b. Zonules of Zinn
   c. Wieger’s ligament
   d. The ciliary body

8. What type of tissue is the vitreous?
   a. Connective
   b. Fibrous
   c. Ocular
   d. Muscular

9. If a patient calls your office complaining of flashes of light and floaters, what should you do?
   a. Make the patient a routine appointment
   b. Refer the patient to his primary care doctor immediately
   c. Have the patient take Motrin and wait for the symptoms to subside
   d. Have the patient report to your clinic immediately

10. At what area in the eye is the vitreous attachment the weakest?
    a. The ora serata
    b. The optic disk
    c. The macula
    d. The posterior lens